

# VISION RESEARCH

## A NATIONAL PLAN

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THE 1977 REPORT OF THE  
NATIONAL ADVISORY EYE COUNCIL

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Volume Three

### *Support for Vision Research*

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This volume of *Vision Research — A National Plan* contains the extensive project data used by the National Advisory Eye Council and its consultants as background information for assessing current needs and opportunities in vision research, identifying priorities for future support, and addressing major issues relating to the National Eye Institute's program. The publication of these data also fulfills the recommendations made in the Council's first report, *Vision Research Program Planning*, published in 1975, that the National Eye Institute provide for "periodic distribution for vision research program planning material to the research community" and that an "annual statistical analysis of the research program" be prepared. The 1975 report included the results of the first comprehensive survey of current (FY 1974) support for vision research in the United States. A compilation of similar data for FY 1975, entitled *Support for Vision Research*, was published as an interim report of the Council.

The present volume contains, as did its antecedents, information on vision research projects funded by the National Eye Institute; other components of the National Institutes of Health; other agencies of the Department of Health, Education, and Welfare; other federal government programs; and selected national private, voluntary, and philanthropic organizations. Projects supported by state and local governments, foreign governments, universities, corporations, and the resources of individual investigators are not included because information from these sources was either incomplete or unavailable.

In publishing these data, the Council reaffirms its belief that an annual survey of vision research projects provides essential information that can be used to assess gaps in support and to identify research areas for which current funding appears to be adequate. By reviewing support provided not only by the National Eye Institute but also by other public and private agencies, the Council and its consultants acquire broad insight into the relevance of vision research to a variety of scientific and public interests. Also, through this process, knowledge is gained of projects whose primary goals may be other than the understanding of visual processes and the prevention, diagnosis, and treatment of visual disorders, but which nevertheless have some relevance to the interests of the National Eye Institute.

# Introduction

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## Summary

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Table 1 summarizes the vision research projects included in this volume. The Table shows that in fiscal year 1976, over \$72 million was spent for vision research by federal government and national not-for-profit organizations in the United

States. These funds were provided by the National Eye Institute, other Institutes of NIH and other DHEW agencies, other organizations within the federal government, and by national private, philanthropic, and voluntary health organizations. Of these, the National Eye Institute was the largest single source of vision research support, accounting for 69 percent of the total funds. It should be noted that the amount shown for the National Eye Institute, \$50,212,000, is the total NEI appropriation for FY 1976. This sum exceeds the total amount of the NEI projects listed in this volume, for it includes funds for NEI direct operations (in addition to intramural research) unobligated balances, and supplemental awards.

Excluded from these totals are approximately \$28 million in projects listed in this volume as being "indirectly" relevant to the mission and program of the National Eye Institute, as explained below.

Table 2 breaks down the totals in Table 1 according to federal agencies and national private, philanthropic, and voluntary health organizations. That components of NIH other than the National Eye Institute provide support for vision research demonstrates the variety of disease and scientific problems with which this discipline is concerned. In some instances, this support is for projects that include the eye among a number of organ systems in which a particular disease is being studied. In such cases, an attempt has been made to identify that portion of funding limited to the eye alone, although this is frequently difficult to do. The fact that an Institute other than the National Eye Institute is supporting any given project indicates either that the primary focus of the research is oriented to the mission of that Institute (e.g. a project investigating the role of systemic hypertension in diabetic retinopathy may be supported by the National Heart, Lung, and Blood Institute) or that NEI funds were not available to support the project at the time it was approved but that another Institute, whose mission also encompassed the project, was interested in and able to fund it.

Vision research supported by other DHEW programs and by other federal agencies is also closely related to the overall mission of the funding organization. Examples are a study of infectious keratitis in cattle supported by the Department of Agriculture and investigations by the Department of Defense of protective measures for combat-related laser irradiation of the eye. Vision research supported by the National Science Foundation is primarily concerned with basic neural mechanisms; vision research underway in Veterans Administration hospitals is concerned with the problems often encountered in patients seen in these institutions. In a number of instances, the Veterans Administration research projects are conducted in conjunction with other projects supported by the NEI and frequently involve the same principal investigator.

It is important to note that the total listed for National Private, Philanthropic, and Voluntary Health Organizations includes only support for the research awards listed in this volume. It excludes research-related support provided by such organizations for facilities construction, equipment, and other important research resources.

TABLE 1  
SUMMARY OF VISION RESEARCH FUNDING, FY 1976

	Amount of Funding	Percent of Funds
Federal Government		
National Eye Institute	\$50,212,000	69
National Institutes of Health (Exclusive of NEI)	8,568,156	12
Department of Health, Education, and Welfare (Exclusive of NIH)	4,079,217	6
Other Federal Support	7,541,532	10
National Private, Philanthropic, and Voluntary Health Organizations	2,176,924	3
TOTAL	\$72,577,829	100

**TABLE 2**  
**SOURCES OF VISION RESEARCH FUNDING, FY 1976**

Department of Health, Education, and Welfare	
National Institutes of Health	
National Eye Institute	\$50,212,000
National Cancer Institute	\$ 1,037,210
National Heart, Lung, and Blood Institute	850,151
National Institute of Arthritis, Metabolism, and Digestive Diseases	427,481
National Institute of Allergy and Infectious Diseases	123,538
National Institute of Communicative Disorders and Stroke	3,733,447
National Institute of Child Health and Human Development	1,111,806
National Institute of Dental Research	24,414
National Institute of General Medical Sciences	565,896
National Institute on Aging	25,452
Division of Research Resources	668,761
Subtotal: National Institutes of Health (Exclusive of NEI)	\$ 8,568,156
Food and Drug Administration	323,478
Health Resources Administration	50,000
National Institute for Occupational Safety and Health	59,549
National Institute of Education	160,000
Alcohol, Drug Abuse, and Mental Health Administration	
National Institute of Mental Health	2,675,570
National Institute on Alcohol Abuse and Alcoholism	317,861
National Institute on Drug Abuse	78,860
Social and Rehabilitation Service	431,899
Subtotal: Department of Health, Education, and Welfare (Exclusive of NIH)	\$ 4,079,217
Other Federal Support	
Consumer Product Safety Commission	47,500
Department of Agriculture	358,776
Department of Commerce	75,000
Department of Defense	226,000*
Air Force	1,240,254
Armed Forces Institute of Pathology	81,631
Army	1,245,384
Navy	697,453
Energy Research and Development Administration	42,934
National Aeronautics and Space Administration	56,000
National Science Foundation	2,818,400
Veterans Administration	652,200
Subtotal: Other Federal Support	\$ 7,541,532
National Private, Philanthropic, and Voluntary Health Organizations	
American Association of Workers for the Blind	17,000
American Cancer Society	171,593
Cleveland Foundation	12,708
Council for Tobacco Research, U.S.A.	24,815
Charles A. Dana Foundation	106,350
Estelle Doheny Eye Foundation	177,046
Eye Bank for Sight Restoration	74,000
Fight for Sight, Inc.	201,680
Max C. Fleischmann Foundation	298,000
John A. Hartford Foundation	18,388
Charles E. Hood Foundation	11,532
Juvenile Diabetes Foundation	163,651
The Moody Foundation	14,000
National Eye Research Foundation	10,000
National Retinitis Pigmentosa Foundation	263,816
National Society for the Prevention of Blindness	40,500
Research Corporation, Cleveland	8,145
Research to Prevent Blindness, Inc.**	310,000
Helena Rubinstein Foundation	25,000
William E. and Bertha F. Schrafft Foundation	12,000
Seeing Eye, Inc.	50,000
Sloan Kettering Institute	50,000
Spencer Foundation	106,700
Matilda Ziegler Foundation	10,000
Subtotal: National Private, Philanthropic, and Voluntary Health Organizations	\$ 2,176,924
<b>TOTAL</b>	<b>\$72,577,829</b>

\*Two projects were funded at the Department level.

\*\*This does not include \$5,466,000 raised for building eye research centers during 1976 through RPB's laboratory construction program.

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## Organization

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Project information in this report is organized under three major headings: (1) NEI program data, (2) research of *direct relevance* to the NEI program sponsored by other organizations, and (3) research of *indirect relevance* to the NEI program sponsored by other organizations. Projects considered directly relevant to the NEI program are defined as those whose primary objective, as determined from a review of their abstracts, is to learn something about either the normal structure or function of the visual system or about the etiology, pathogenesis, prevention, diagnosis, or treatment of visual disorders. Those considered to be of indirect relevance are projects in which the visual system or its components are only minor or incidental elements or in which the eye is merely used as a test system or tool to gain information on topics other than normal or abnormal vision. Examples are a study of visual perception in which psychological or behavioral factors are the primary concern, an investigation of visual factors in aerospace flight, and a study of the effect of ethanol on the pupillary reactivity of alcoholics. Other kinds of projects included in this category are those in which basic mechanisms relating to the eye are studied or in which systemic factors that affect the eye are investigated — but in tissues other than those of the visual system.

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## Data Sources

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The primary source used to identify these projects was the Smithsonian Science Information Exchange (SSIE). Abstracts of over 1,500 research projects identified by the SSIE as vision-related were carefully reviewed by members of the NEI's scientific staff. Lists of the projects selected by the NEI staff for inclusion in this report were submitted to each supporting agency for verification or completion. As a result of the exchange of information which followed, additional projects were identified that were subsequently reviewed for relevance to the NEI's program, and projects no longer active were deleted. As a result, about twice as many projects are included in the current report as in either of the earlier ones. This may be due in part to increased support of vision research by agencies other than the NEI in FY 1976, but certainly the principal reason is the considerable effort made to identify relevant projects. Whether a project is listed as having either direct or indirect relevance to the NEI program has in great part been determined by the individual reviewer's judgment. And, because titles alone frequently do not indicate the actual scope or content of the project, some listed projects may not seem to be related at all to the NEI program. However, the Council is satisfied with the accuracy and comprehensiveness of these lists, given the present limitations of methods for coding, retrieving, and analyzing the type of data they contain.

Some information on funding by private organizations was obtained from the SSIE, but most of this information was acquired by direct contact with groups known to support vision research.

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## Data Classification

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Within each of the three categories, most projects are listed according to the five NEI programs: *Retinal and Choroidal Diseases, Corneal Diseases, Cataract,*



*Glaucoma*, and *Sensory and Motor Disorders of Vision*. A sixth multiprogram class has been established for projects that cannot be so classified.

Funding often had to be estimated for vision research projects supported by organizations other than the NEI, especially those funded through large multiprogram grants. This was done either by dividing the number of separate vision-related projects included as part of a large grant into the total dollars awarded for that grant and using the resulting figure for each vision component, or by using the funding agency representative's estimate of the proper amount. Unfortunately, there are projects listed for which no estimate of funding could be made. This is often the case with research projects conducted intramurally by government scientists because there is seldom a project-by-project accounting of the costs of such research.

For the National Eye Institute's intramural research projects, an attempt was made to estimate total direct costs. These costs are not easily compared with the direct costs listed for NEI grant-supported projects because the amounts identified for grants represent only the National Eye Institute's support for a project. The NEI frequently does not pay the total costs of these projects; complementary support is provided by the grantee institution and in many cases by other funding sources. The NEI must, however, pay all the costs of its own intramural research.

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## NEI Program Data

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Vision research projects supported by the NEI during FY 1976 are divided into seven sections. The first five sections list projects supported in the five NEI research programs, the sixth includes projects relating to more than one program, and the seventh presents NEI research training and career development awards. Within the first five sections, lists of the following are included when applicable: research project grants (alphabetically and according to each of several subprograms), specialized clinical research center grants, research contracts, and intramural research projects. Core center grants constitute the multiprogram category. For vision research training and career development awards, the four tables list institutional research training awards, individual postdoctoral awards, research career development awards, and academic investigator awards. Except for the institutional awards that often support training related to more than one area of vision research, each of these tables is organized according to the five NEI programs.

All lists include only projects that were *active* in FY 1976. Some active awards did not receive FY 1976 funds but were supported with money appropriated during a previous year and are so designated. Projects printed in italics were initiated with funds awarded during the Transition Quarter. This three-month period, July to September 1976, was the result of a shift in the start of the federal fiscal year from July 1 to October 1 beginning with FY 1977 as required by the Budget Control and Impoundment Act of 1974. The NEI material in this report is current up to the end of the Transition Quarter.

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## Research Sponsored by Other Organizations— Projects of Direct Relevance to the NEI Program

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Again, the projects grouped within this category are considered to be of direct relevance to the mission of the NEI; that is, they are primarily concerned with gaining new knowledge and understanding of the normal functioning of the eye and visual system, the pathology of visual disorders, and the sciences underlying vision.

Within each of the five NEI programs to which these projects correspond, there is a list of the extramural grants, contracts, and intramural projects of all other components of NIH and DHEW, all other federal funding, and support by private, philanthropic, and voluntary organizations.

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## Research Sponsored by Other Organizations— Projects of Indirect Relevance to the NEI Program

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In this category the vision-related portion of the listed projects may be incidental and involve ocular tissues or visual function only secondarily, if at all. Such projects, which together account for almost \$28 million, are listed here because they relate to vision research in its broadest sense and may be of interest to the readers of this report. This funding, however, is not included in the summary tables of vision research support by United States public and private agencies which appear above. As in the preceding category, projects listed here are supported by other components of NIH and DHEW, by the rest of the federal government, and by private, philanthropic, and voluntary organizations. Again, although they are grouped according to their relationship to the five NEI programs, the projects in this category bear only indirectly upon the mission of the NEI.

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## Index

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The last section of this volume is a multipart index. In it, the reader can identify every project listed in this volume according to research subject and approach. The Entry Number for each project (1 through 2334) is included under at least one of three headings: *Primary Diseases and Conditions of the Eye* (Medical and Biological Studies), *Vision and Perception* (Behavioral Studies), and *General Body Diseases and Conditions Involving the Eye* (Medical and Biological Studies). The first heading includes biomedical studies of the eye itself and its central pathways. The second encompasses behavioral studies of vision and perception representing the functional aspects of the central or peripheral retina, the functional neurology of the receptive field, psychophysical studies, or similar work. Studies of the eye as affected by general body states and diseases are included under the third heading. Each of these three matrices is divided into two parts: *Human and Clinical* and *Animal and Laboratory* research. Studies that have both laboratory and clinical components are listed in both groups.

Within each matrix of this index, research Subjects (ocular structure, visual function, or systemic condition or disorder) are listed horizontally, and research Approaches are listed vertically. The intersections of all Subjects and Approaches form blocks, most of which contain Entry Numbers corresponding sequentially to the projects listed in all three sections of this volume. The Entry Numbers may be used to find the titles and associated information listed for each of the related projects. An appendix on the last page of the index continues those boxes too small to hold all the applicable Entry Numbers.

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## Terms Used in NEI Data Tables

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**Research Objective.** Etiology, Diagnosis, or Treatment. Assigned by NEI to each project based on the investigator's description of the planned research activity. If a project does not appear to be distinctly related to Diagnosis or Treatment, it has been categorized as applicable to Etiology, which includes pathogenesis and other basic research objectives.

**Grant Number.** This is the official Public Health Service identification number, which consists of several parts. The first digit refers to the grant's application type according to the following code:

1. New
2. Competing Renewal
3. Supplement
4. Noncompeting Renewal (Fellowship and Research Career Programs)
5. Noncompeting Continuation
6. Change of NIH Supporting Institute or Division (Fellowships and Training Programs)
7. Change of Grantee Institution
8. Change of NIH Supporting Institute or Division (Non-competing Continuation)
9. Change of NIH Supporting Institute or Division (Competing Renewal)

1. **New.** A request for support for a project or program not currently receiving Public Health Service support. If approved, it must compete with other new applications, competing renewal applications, and competing supplemental applications for any available funds in accordance with funding priorities.

2. **Competing Renewal.** An application for extending support for one or more *Budget Periods* for an existing grant whose current *Project Period* is terminating. These applications are subject to the same review as new applications, and they compete for available funds with other competing renewal applications, new applications, and competing supplemental applications.

3. **Supplement.** A request for additional funding for an active grant within an approved *Budget Period* to support certain types of program expansion or administrative cost increases. Applications for program expansions are subject to the same review procedures as new or competing renewal applications. Applications for funds to meet increased administrative costs for approved activities usually do not require a formal assessment by peer reviewers but are subject to the approval of the NEI and the availability of funds.

4. **Noncompeting Renewal (Fellowship and Research Career Programs).** Identifies a request for additional support beyond that previously recommended and does not compete for available funds.

5. **Noncompeting Continuation.** A request for continued support of a grant for a subsequent *Budget Period* within a previously approved *Project Period*. The level of support is determined by the

NEI after consideration of the Council's previously recommended level of support, the progress of the project, and the availability of funds. It is the policy of the National Institutes of Health to do everything it can within the boundaries of prudent management to avoid discontinuities of support during a *Project Period*.

The second part of the number is a three-digit code identifying the various NIH research grant or contract mechanisms used by the NEI.

#### Research Project Grants

- R01 Project Grant (traditional). Supports a discrete, specified, circumscribed project initiated and performed by the named principal investigator(s).
- R13 Conference Grant (traditional). Supports international or national meetings, conferences, and workshops.
- R23 Special Visual Sciences Research Award Program. Supports laboratory and clinical studies by newly trained investigators to aid the development of their research careers.

#### Program Project and Center Grants

- P01 Research Program Project Grant. Supports broadly based, multidisciplinary, often long-term research programs that have specific objectives. (There was only one NEI Research Program Project Grant still active in FY 1976, and this mechanism has been phased out.)
- P30 Core Center Grant. Supports shared resources and facilities used by a number of investigators who hold active research project grants.
- P50 Specialized Clinical Research Center Grant. Supports research and development activities that are directed toward a specific disease entity or biomedical problem, especially toward improving the capability of applying scientific knowledge to clinical problems.

#### Research Contracts

- N01 Research Contract. Supports the development and/or application of new knowledge or the testing, screening, or evaluation of a product, material, device, or component for use by the scientific community. Typically, the NEI restricts the use of this award to the support of multicenter, fixed protocol clinical trials, to the maintenance of specialized research resources such as colonies of animals with visual system disorders which are similar to those observed in humans, or to the support of specialized instrumentation development.

#### Institutional Research Training Grants

- T01 Graduate Research Training Program. Assists and extends the training of individuals preparing for research and academic careers related to vision.\*
- T32 Institutional National Research Service Award. Enables institutions to support predoctoral and postdoctoral research training and to assist and extend training of individuals preparing for research and academic careers related to vision.

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\*This training mechanism is superseded by Title I, Public Law 93-348, the National Research Act of 1974 and is being phased out.



### Research Fellowships

- F02 Postdoctoral Fellowship. Supports postdoctoral research training in vision research.\*
- F03 Special Fellowship. Supports individuals in mid-career to help them advance their research skills.\*
- F22 Individual Research Fellowship. Helps broaden the scientific background of vision scientists working in specified shortage areas and extends the potential for research in vision-related areas.\*
- F32 Postdoctoral Individual National Research Service Award. Supports postdoctoral research training to enable individuals to broaden their scientific background and extend their potential for research in vision-related areas.

### Research Career Program Awards

- K04 Research Career Development Award. Encourages the further development of research careers of scientists who have demonstrated potential for independent research in vision and ophthalmology.
- K07 Academic Investigator Award. Fosters the development of newly trained laboratory scientists and clinicians for careers as independent investigators in basic and applied vision science.

For further discussion of these various support mechanisms, see pertinent sections of Volumes One and Two of this report.

The awarding organization is identified by the two letters which begin the next part of the grant number; EY signifies the National Eye Institute. The next five digits are generally assigned sequentially and represent the grant's official serial number. The suffix that is separated from the serial number by a hyphen indicates how many years the project or award has been active. The letter A signifies an amendment, a grant for which additions or changes have been made in the original application and which has been resubmitted for peer review. (Project numbers for NEI intramural projects conclude with CB for Clinical Branch, LVR for Laboratory of Vision Research, and OBE for Office of Biometry and Epidemiology.)

**Entry Number.** Serial number by which each project is identified in this volume only for use with the indexes beginning on page 260.

**Project Period.** Indicates the total period of time authorized for funding an award.

**Budget Period.** The actual calendar period (usually 12 months) into which the grant's total *Project Period* is divided for budgetary and reporting purposes.

**Subprogram (Area).** A key to these letter codes appears before the tables for each NEI program.

**Direct Costs.** Expenditures for personnel, equipment, consultants, travel, and other costs directly related to the performance of research under a specific grant.

**Indirect Costs.** The costs incurred by an organization that are not readily identifiable with a particular project or program but are necessary to the operation of the organization and the performance of these projects and programs. Each institution has its own indirect cost rate; the FY 1976 average rate for NIH is 40 percent of the *Direct Costs* for all individual projects.

**Total Awarded.** The sum of *Direct Costs* and *Indirect Costs*. It does not include unobligated balances from previous years deducted from the current year's total award.

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\*This training mechanism is superseded by Title I, Public Law 93-348, the National Research Act of 1974 and is being phased out.



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# National Eye Institute Program Data

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## I. Retinal and Choroidal Diseases

## Subprograms

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### I. RETINAL AND CHOROIDAL DISEASES

#### Problem Areas and Specific Disorders

- A. Developmental and Hereditary Disorders
- B. Diabetic Retinopathy and Other Vascular and Circulatory Abnormalities
- C. Myopia
- D. Tumors
- E. Macular Diseases
- F. Retinal Detachment
- G. Inflammatory Disorders

#### Development, Structure, and Function as Related to Disease

- H. Uveal Tract
- I. Vitreous Humor
- J. Visual Cells and Pigment Epithelium
- K. Retinal Organization and Visual Adaptation
- L. Special Areas of Future Interest
  - 1. *Toxic and Environmental Disorders*
  - 2. *Low Vision*
  - 3. *Retinal Regeneration and Transplantation*
  - 4. *Tissue Acquisition and Distribution: Human Donor Eyes and Animal Models*

# I. Retinal and Choroidal Diseases

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
NATIONAL EYE INSTITUTE RESEARCH PROJECT GRANTS ACTIVE FY 1976 — ALPHABETICAL LISTING							
ABRAMOV, ISRAEL Spectral Properties of Cells in the Goldfish Retina Brooklyn College Psychology New York, New York Etiology	1 R01 EY01697-01	1	05/01/76-04/30/77 05/01/76-04/30/81 K	37,020	16,458	53,478	148,206
ADAMS, CALVIN K The Photoreceptor Mosaic in Man and Monkey University of Florida Ophthalmology Gainesville, Florida Etiology	5 R01 EY01468-02	2	06/01/76-05/31/77 06/01/75-05/31/77 J	39,755	14,694	54,449	85,903
AGUIRRE, GUSTAVO D Cone Degeneration — Structural and Functional Studies University of Pennsylvania Clinical Studies Philadelphia, Pennsylvania Etiology	2 R01 EY01244-04	3	03/01/76-02/28/77 03/01/76-02/28/79 A	64,595	24,461	89,056	182,033
ALBERT, DANIEL M Histopathologic Study of Pigmented Ocular Tumors Yale University Ophthalmology and Visual Sciences New Haven, Connecticut Etiology Diagnosis	5 R01 EY00108-07	4	02/01/76-06/30/76 02/01/75-06/30/76 D	18,731	10,658	29,389	93,327
ALLEN, DONALD M Physiology of Visual Pigments University of Oregon Biology Eugene, Oregon Etiology	7 R01 EY01741-01	5	09/01/75-08/31/76 09/01/75-08/31/77 J	15,900	2,698	18,598	32,225
ALPERN, MATHEW Psychophysiological Studies of Ocular Abnormalities University of Michigan Ophthalmology Ann Arbor, Michigan Etiology Diagnosis	5 R01 EY00197-18	6	09/01/75-08/31/76 09/01/73-08/31/78 J	64,373	36,466	100,839	269,004
ALVARADO, JORGE A Pathogenesis of Macular Degeneration University of California, San Francisco Ophthalmology San Francisco, California Etiology	5 R01 EY0799-05	7	01/01/76-12/31/76 01/01/75-12/31/77 E	33,865	11,137	45,002	104,557
ANDERSON, ROBERT E Metabolism of Visual Cells Baylor College of Medicine Ophthalmology Houston, Texas Etiology	5 R01 EY00871-05	8	02/01/76-01/31/77 02/01/75-01/31/78 J	62,022	17,733	79,755	186,266
APPLEBURY, MEREDITH L Photoreception and Transduction in Vision Princeton University Biochemical Sciences Princeton, New Jersey Etiology	5 R01 EY01542-02	9	06/01/76-05/31/77 06/01/75-05/31/78 J	29,290	11,175	40,465	102,324

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ARNETT, DAVID W Interactions Between Mammalian Pennsylvania State University University Park, Pennsylvania Etiology	1 R23 EY01652-01	10	05/01/76-04/30/77 05/01/76-04/30/79 K	7,464	2,624	10,088	22,464
BAKER, HOWARD D Very Early Dark Adaptation From Intense Bleaches Florida State University Tallahassee, Florida Etiology	2 R01 EY01394-02	11	06/01/76-05/31/77 06/01/76-05/31/79 K	24,278	6,931	31,209	72,670
BALAZS, ENDRE A Physiology and Pathology of the Vitreous Columbia University New York, New York Etiology	7 R01 EY01747-01	12	10/01/75-02/29/76 10/01/75-02/29/76 I	22,726	7,045	29,771	22,726
BALAZS, ENDRE A Physiology and Pathology of the Vitreous Columbia University New York, New York Etiology	2 R01 EY01747-02	13	03/01/76-02/28/77 03/01/76-02/28/79 I	142,891	37,476	180,367	434,343
BARON, WILLIAM S Photoreceptor Information Processing in Primates Stanford Research Institute Electronics and Bioengineering Laboratory Menlo Park, California Etiology	5 R01 EY01579-02	14	06/01/76-05/31/77 06/01/75-05/31/78 K	66,888	54,933	121,821	193,570
BASINGER, SCOTT F Retina: Photoreceptor Membrane Synthesis and Function Baylor College of Medicine Houston, Texas Etiology	5 R01 EY01406-02	15	06/01/76-05/31/77 06/01/74-05/31/77 J	36,352	10,343	46,695	115,301
BAYLOR, DENIS A Neural Signalling in the Retina Stanford University Stanford, California Etiology	5 R01 EY01543-02	16	09/01/75-08/31/76 09/01/74-08/31/77 K	18,140	9,598	27,738	53,830
BECKER, RALPH S Spectratheory and Photochemistry of Visual Pigments University of Houston Houston, Texas Etiology	5 R01 EY00875-05	17	06/01/76-05/31/77 06/01/75-05/31/77 J	19,084	8,234	27,318	44,865
BELLHORN, ROY W Vascular Role in Experimental Retinopathies Montefiore Hospital and Medical Center Ophthalmology New York, New York Etiology	5 R01 EY01103-02	18	06/01/76-05/31/77 06/01/74-05/31/77 B	33,785	7,714	41,499	106,387
BERG, HOWARD C Photophysiology in a Bacterium Containing Rhodopsin University of Colorado Molecular, Cellular and Developmental Biology Boulder, Colorado Etiology	2 R01 EY01263-03	19	03/01/76-11/30/76 03/01/76-11/30/78 J	32,314	11,428	43,742	117,759

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BERMAN, ELAINE R Studies on the Pigment Epithelium of the Retina Hebrew University of Jerusalem Ophthalmology Jerusalem, Israel Etiology	5 R01 EY01131-02	20	06/30/76-06/29/77 06/30/75-06/29/77 J	12,250	0	12,250	48,669
BERSON, ELIOT L Electrophysiological Studies of Retinal Degenerations Harvard University Ophthalmology Boston, Massachusetts Etiology	5 R01 EY00169-06	21	06/01/76-05/31/77 06/01/74-05/31/79 A	41,070	14,639	55,709	171,080
BLASIE, J KENT Structure and Function of Membranes Involved in Vision University of Pennsylvania Biophysics and Physical Chemistry Philadelphia, Pennsylvania Etiology	5 R01 EY00673-05	22	05/01/76-04/30/77 05/01/74-04/30/77 J	34,412	15,657	50,069	102,070
BOGGS, THOMAS R, JR Prematurity, Vitamin E and Retrolental Fibroplasia Pennsylvania Hospital Pediatrics Philadelphia, Pennsylvania Etiology	1 R01 EY01723-01	23	06/30/76-06/29/77 06/30/76-06/29/77 B	35,000	17,500	52,500	35,000
BOK, DEAN Electron Microscope Autoradiography of Ocular Tissues University of California, Los Angeles Anatomy Los Angeles, California Etiology	5 R01 EY00444-08	24	12/01/75-11/30/76 12/01/71-11/30/76 J	23,574	8,370	31,944	104,168
BOWND, M DERIC Molecular Biology of Visual Receptor Outer Segments University of Wisconsin, Madison Molecular Biology Madison, Wisconsin Etiology	5 R01 EY00463-08	25	02/01/76-01/31/77 02/01/72-01/31/77 J	43,500	15,400	58,900	179,382
BRAMMER, JIMMIE D Vitamin A and Photoreception in Insect Visual Systems University of Vermont and State Agriculture College Zoology Burlington, Vermont Etiology	5 R01 EY01150-03	26	04/01/76-03/31/77 04/01/74-03/31/77 J	23,322	12,247	35,569	66,267
BRIDGES, C DAVID Photochemical and Biochemical Reactions in the Visual System New York University Ophthalmology New York, New York Etiology	5 R01 EY00461-08	27	02/01/76-01/31/77 02/01/74-01/31/79 J	69,509	29,470	98,979	284,432
BRODY, SEYMOUR S Use of Monomolecular Films to Study Visual Processes New York University Biology New York, New York Etiology	5 R01 EY00173-08	28	05/01/76-04/30/77 05/15/74-04/30/77 J	32,363	18,733	51,096	96,638
BROWN, HAROLD M Transduction Mechanism of Photoreceptors University of Utah Physiology Salt Lake City, Utah Etiology	2 R01 EY00762-05	29	03/01/76-01/31/77 03/01/76-01/31/81 J	75,310	33,529	108,839	346,505
BROWN, JOEL E Visual Receptor Potentials Vanderbilt University Anatomy Nashville, Tennessee Etiology	2 R01 EY00834-05	30	03/01/76-04/30/76 03/01/76-04/30/76 J	5,910	2,013	7,923	5,910

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BROWN, JOEL E Anatomy and Physiology of Vision Vanderbilt University Anatomy Nashville, Tennessee Etiology	5 R01 EY00835-05	31	01/01/76-04/30/76 01/01/73-04/30/76 J	3,924	1,622	5,546	107,521
BROWN, JOEL E Visual Receptor Potentials State University of New York at Stony Brook Physiology and Biophysics Stony Brook, New York Etiology	7 R01 EY01914-01	32	05/01/76-04/30/77 05/01/76-04/30/81 K	38,058	8,113	46,171	171,093
BROWN, JOEL E Anatomy and Physiology of Vision State University of New York at Stony Brook Physiology and Biophysics Stony Brook, New York Etiology	7 R01 EY01915-01	33	05/01/76-12/31/76 05/01/76-12/31/77 K	30,437	9,519	39,956	59,239
BROWN, KENNETH T Neurophysiology of the Vertebrate Retina University of California, San Francisco Physiology San Francisco, California Etiology	5 R01 EY00468-17	34	06/01/76-05/31/77 06/01/75-05/31/80 K	117,640	39,861	157,501	509,636
BUNI, ANN H Protein Transport in Retinal Photoreceptors and Axons University of Washington Ophthalmology Seattle, Washington Etiology	5 R01 EY01311-03	35	02/01/76-01/31/77 02/01/74-01/31/77 J	30,950	11,296	42,246	100,316
BURKHARDT, DWIGHT A Vision and Intraretinal Potentials University of Minnesota Psychology Minneapolis, Minnesota Etiology	5 R01 EY00460-08	36	02/01/76-01/31/77 02/01/75-01/31/78 K	17,663	6,404	24,067	61,527
CARR, RONALD E ERG and Psychophysical Studies in Retinal Disorders New York University Ophthalmology New York, New York Etiology Diagnosis	5 R01 EY00213-17	37	04/01/76-03/31/77 04/01/72-03/31/77 A	74,485	34,500	108,985	238,684
CASTANY, MARIE A Effects of Blood pO <sub>2</sub> , pCO <sub>2</sub> , and pH on Retinal Vessels Eye Research Institute of Retina Foundation Retina Research Boston, Massachusetts Etiology	1 R23 EY01400-01	38	06/01/74-02/28/77 06/01/74-02/28/77 B	*			14,978
CHAKRABARTI, BIRESWAR Role of Hyaluronic Acid in the Vitreous Structure Eye Research Institute of Retina Foundation Retina Research Boston, Massachusetts Etiology	1 R01 EY01760-01	39	05/01/76-04/30/77 05/01/76-04/30/79 I	36,979	19,539	56,518	130,028
CHAPPELL, RICHARD L Neural Interactions of the Retina Hunter College, Biological Sciences New York New York Etiology	5 R01 EY00777-05	40	05/01/76-04/30/77 05/01/75-04/30/79 K	37,810	12,842	50,652	99,356



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CHAR, DEVRON H Uveitis: Specific and Nonspecific Cellular Reactivity University of California, San Francisco Ophthalmology San Francisco, California Etiology	1 R01 EY01759-01	41	06/01/76-05/31/77 06/01/76-05/31/79 G	51,340	10,254	61,594	170,929
CHEN, CHUNG-Ho Biochemical Studies of Proliferative Retinopathies Johns Hopkins University Ophthalmology Baltimore, Maryland Etiology	5 R01 EY01399-02	42	06/01/76-05/31/77 06/01/75-05/31/77 B	68,799	32,616	101,415	127,071
COHEN, ADOLPH I Cytology and Physiology of the Retina Washington University Ophthalmology University City, Missouri Etiology	5 R01 EY00258-13	43	09/01/75-08/31/76 09/01/74-08/31/79 J	63,329	29,313	92,642	257,854
COLEMAN, D JACKSON Ultrasonic Evaluation of Ocular Tissues Columbia University Ophthalmology New York, New York Diagnosis	5 R01 EY01218-03	44	05/01/76-04/30/77 05/01/74-04/30/77 D	53,374	16,546	69,920	154,052
CONE, RICHARD A Visual Excitation Role of Visual Pigment Johns Hopkins University Biophysics Baltimore, Maryland Etiology	5 R01 EY00520-07	45	09/01/75-08/31/76 09/01/74-08/31/79 J	31,591	15,164	46,755	173,658
CORLESS, JOSEPH M Retinal Rod Photoreceptor Membrane Structure/Function Duke University Anatomy Durham, North Carolina Etiology	1 R01 EY01659-01	46	05/01/76-04/30/77 05/01/76-04/30/79 J	57,990	12,618	70,608	117,625
CRESCITELLI, FREDERICK Comparative Studies of the Vertebrate Retina University of California, Los Angeles Biology Los Angeles, California Etiology	5 R01 EY00100-18	47	01/01/76-12/31/76 01/01/75-12/31/77 J	26,784	9,160	35,944	83,418
CROSS, HAROLD E Abnormality in Collagen Packing: Cross-Linking University of Arizona Surgery Tucson, Arizona Etiology	1 R01 EY01633-01	48	05/01/76-04/30/77 05/01/76-04/30/78 I	33,332	10,521	43,853	70,692
Crouch, Rosalie K Retinal Disease and Artificial Visual Pigments Medical University of South Carolina Ophthalmology Charleston, South Carolina Etiology	1 R01 EY01612-01A1	49	09/30/76-09/29/77 09/30/76-09/29/79 J	28,492	3,950	32,442	66,167
CUSANOVICH, MICHAEL A Regeneration of the Visual Pigment Rhodopsin University of Arizona Chemistry Tucson, Arizona Etiology	5 R01 EY01113-02	50	06/01/76-05/31/77 06/01/75-05/31/78 J	15,276	4,479	19,755	43,417
DAVID, NOBLE J Experimental Fluorescein Angiography University of Miami Ophthalmology Miami, Florida Etiology Diagnosis	5 R01 EY0093-10	51	05/01/76-04/30/77 05/01/75-04/30/78 B	49,391	16,413	65,804	144,157

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DE VENECIA, GUILLERMO B The Eye in Malignant Hypertension University of Wisconsin, Madison Madison, Wisconsin Etiology      Diagnosis      Treatment	5 R01 EY01007-03	52	04/01/76-03/31/77 04/01/74-03/31/77 B	47,813	19,160	66,973	149,096
DE VOE, ROBERT D Analysis of Flicker Retinal Action Potentials Johns Hopkins University Baltimore, Maryland Etiology	2 R01 EY00008-14	53	03/01/76-12/31/76 03/01/76-12/31/80 K	65,176	14,496	79,672	206,073
DELORI, FRANCOIS C Study of Hemodynamics of Choroidal Circulation Eye Research Institute of Retina Foundation Retina Research Boston, Massachusetts Etiology      Diagnosis	5 R01 EY01556-02	54	06/01/76-05/31/77 06/01/75-05/31/78 B	26,266	13,731	39,997	97,164
DOWLING, JOHN E Anatomical Organization of the Visual System Harvard University Cambridge, Massachusetts Etiology	5 R01 EY00811-05	55	09/01/75-11/30/76 09/01/71-11/30/76 K	31,144	16,973	48,117	118,527
DOWLING, JOHN E Functional Organization of Vertebrate Visual Systems Harvard University Cambridge, Massachusetts Etiology	5 R01 EY00824-06	56	06/01/76-05/31/77 06/01/74-05/31/79 K	43,399	23,107	66,506	172,375
DRAITZ, EDWARD A Studies of the Prevention of Retinal Rod Degeneration University of California, Santa Cruz Santa Cruz, California Etiology	5 R01 EY01521-02	57	06/01/76-05/31/77 06/01/75-05/31/78 J	62,884	21,506	84,390	214,895
DRAITZ, EDWARD A Structure and Function of Visual Photoreceptors University of California, Santa Cruz Santa Cruz, California Etiology	2 R01 EY00175-07	58	05/01/76-04/30/77 05/01/76-04/30/79 J	48,150	14,415	62,565	137,099
DUPONT, BO Spontaneous Regression in Retinoblastoma Sloan-Kettering Institute for Cancer Research Immunology Parameters Laboratory New York, New York Etiology	1 R01 EY01616-01	59	06/09/76-05/31/77 06/09/76-05/31/79 D	35,365	16,770	52,135	148,450
EASTER, STEPHEN S, JR Visual Mechanisms in Lower Vertebrates University of Michigan Ann Arbor, Michigan Etiology	5 R01 EY00168-07	60	05/01/76-04/30/77 05/01/73-04/30/78 K	13,577	6,813	20,390	58,282
EBREY, THOMAS G Studies on the Mechanism of Visual Excitation University of Illinois, Urbana Physiology and Biophysics Urbana, Illinois Etiology	5 R01 EY01323-04	61	06/01/76-05/31/77 06/01/75-05/31/80 J	32,421	16,309	48,730	161,221
EISENBERG, MOISES Incorporation of Rhodopsin into Artificial Membranes State University of New York at Stony Brook Pharmacological Sciences Stony Brook, New York Etiology	1 R01 EY01530-01	62	06/01/76-05/31/77 06/01/76-05/31/79 J	26,937	5,764	32,701	68,187



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ENGERMAN, RONALD L Study of Diabetic Retinopathy University of Wisconsin, Madison Madison, Wisconsin Etiology Diagnosis	5 R01 EY00300-11	63	09/01/75-08/31/76 09/01/72-08/31/77 B	113,529	40,456	153,985	439,515
ENOCH, JAY M The Etiology of Reduced Visual Function University of Florida Gainesville, Florida Etiology Diagnosis	5 R01 EY01418-02	64	09/01/75-08/31/76 09/01/74-08/31/77 K	89,217	36,914	126,131	267,952
FAGER, ROGER S Preparation and Characterization of Cone Pigments University of Virginia Charlottesville, Virginia Etiology	5 R01 EY01505-02	65	06/30/76-06/29/77 06/30/74-06/29/77 J	36,970	13,762	50,732	154,615
FEDERMAN, JAY L Tumor-Associated Antibodies Against Ocular Melanomas Wills Eye Hospital Philadelphia, Pennsylvania Etiology Diagnosis	5 R01 EY01467-02	66	06/01/76-05/31/77 06/01/75-05/31/78 D	20,328	7,984	28,312	78,786
FEENEY, LYNETTE Synthesis and Phagocytosis in Ocular Neuroepithelia University of Oregon Health Sciences Center Ophthalmology Portland, Oregon Etiology	5 R01 EY00715-05	67	05/01/76-04/30/77 05/01/74-04/30/77 J	24,063	9,420	33,483	83,687
FEIN, ALAN Mechanisms of Vision Marine Biological Laboratory Sensory Physiology Woods Hole, Massachusetts Etiology	5 R01 EY01362-02	68	06/01/76-05/31/77 06/01/74-05/31/77 K	37,670	6,346	44,016	114,490
FENDER, DEREK H Nonlinear Identification of Retinal Biopotentials California Institute of Technology Biology and Applied Science Pasadena, California Etiology Diagnosis	5 R01 EY01526-02	69	06/01/76-05/31/77 06/01/75-05/31/78 K	30,188	13,585	43,773	94,721
FINE, STUART L Clinicogenetic Studies of Best's Macular Dystrophy Johns Hopkins University Baltimore, Maryland Etiology Diagnosis	5 R01 EY00976-04	70	08/01/75-07/31/76 08/01/72-07/31/77 E	33,521	15,969	49,490	124,516
FINKELSTEIN, DANIEL Branch Vein Occlusion: Natural History and Treatment Johns Hopkins University Baltimore, Maryland Diagnosis Treatment	1 R01 EY01780-01	71	06/30/76-06/29/77 06/30/76-06/29/77 B	35,000	16,800	51,800	35,000
FINKELSTEIN, DANIEL Pathogenesis of Primary Retinitis Pigmentosa Johns Hopkins University Baltimore, Maryland Etiology Diagnosis	1 R01 EY01791-01	72	05/01/76-04/30/77 05/01/76-04/30/79 A	50,920	21,648	72,568	147,728

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FINKELSTEIN, DANIEL Experimental Retinal Neovascularization Johns Hopkins University Baltimore, Maryland Etiology	5 R01 EY01368-03	73	06/30/76-06/29/77 06/30/75-06/29/78 K	41,828	20,077	61,905	125,859
FISHER, LESLIE J Developmental Analysis of Retinal Synaptic Organization University of Michigan Ann Arbor, Michigan Etiology	5 R01 EY01281-02	74	01/01/76-03/31/77 06/01/74-03/31/77 K	12,664	8,794	21,458	31,298
FISHER, STEVEN K Studies on the Developing and Adult Visual System University of California, Santa Barbara Biological Sciences Santa Barbara, California Etiology	2 R01 EY00888-05	75	03/01/76-12/31/76 03/01/76-12/31/79 A	45,474	13,035	58,509	143,998
FITZGERALD, CONSTANCE R Photocoagulation Treatment of Maculopathy University of Florida Gainesville, Florida Treatment	5 R01 EY01084-02	76	06/30/76-06/29/77 06/30/75-06/29/78 E	28,301	11,926	40,227	84,479
FLEISCHMAN, DARRELL E Cyclic Nucleotide Function in Photoreceptors Charles F. Kettering Foundation Research Laboratory Yellow Springs, Ohio Etiology	2 R01 EY00847-04	77	06/01/76-05/31/77 06/01/76-05/31/79 J	21,180	8,948	30,128	66,318
FLYNN, JOHN T Retrolental Fibroplasia: The Evolution of the Lesion University of Miami Miami, Florida Etiology	5 R01 EY01236-02	78	06/01/76-05/31/77 06/01/75-05/31/79 B	52,411	22,763	75,174	157,456
FOOS, ROBERT Y Vitreoretinal Junction University of California, Los Angeles Jules Stein Eye Institute Los Angeles, California Etiology	5 R01 EY00725-05	79	05/01/76-04/30/77 05/01/75-04/30/78 I	30,072	10,285	40,357	91,386
FRANK, KAY E Ocular Injury by Ultrasound Case Western Reserve University Cleveland, Ohio Etiology	5 R23 EY01508-02	80	02/01/76-01/31/77 02/01/75-01/31/78 D	7,500	3,750	11,250	22,500
Frank, Robert N Retinal Microvessels: Tissue Culture and Biochemistry Wayne State University Detroit, Michigan Etiology	1 R01 EY01857-01	81	09/30/76-09/29/77 09/30/76-09/29/79 B	18,826	5,295	24,121	80,077
FRAUNFELDER, FREDERICK T Treatment of Intraocular Tumors University of Arkansas Medical Sciences Campus Ophthalmology Little Rock, Arkansas Etiology Treatment	5 R01 EY00891-03	82	09/01/73-08/31/77 09/01/71-08/31/77 D	*			51,144
FROMM, PAUL O Comparative Physiological Studies of Vertebrate Eyes Michigan State University East Lansing, Michigan Etiology	2 R01 EY00009-13	83	03/01/76-11/30/76 03/01/76-11/30/78 A	23,187	10,289	33,476	89,016

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FUTTERMAN, SIDNEY Retinal Metabolism University of Washington Seattle, Washington Etiology	5 R01 EY00343-11	84	06/01/76-05/31/77 06/15/74-05/31/79 J	34,028	11,373	45,401	147,099
GEERAETS, RAGNIT Teratogenic Induction of Coloboma Virginia Commonwealth University Richmond, Virginia	5 R23 EY01360-02	85	06/01/76-05/31/77 06/01/74-05/31/77 L(1)	7,231	3,011	10,242	24,605
GIBBS, GORDON E Retinal Microaneurysms, Effect of Hypophysectomy University of Nebraska Medical Center Omaha, Nebraska Etiology	2 R01 EY00437-06A1	86	05/01/75-04/30/77 05/01/75-04/30/77 B	*			6,930
GILLARY, HOWARD L Visual Mechanisms in a Regenerating Gastropod Retina University of Hawaii at Manoa Honolulu, Hawaii Etiology	5 R01 EY01531-02	87	06/01/76-05/31/77 06/01/75-05/31/77 L(3)	18,668	6,147	24,815	49,503
GOLDSMITH, TIMOTHY H Visual Mechanisms Yale University New Haven, Connecticut Etiology	5 R01 EY00222-16	88	04/01/76-03/31/77 04/01/74-03/31/79 J	38,379	16,905	55,284	164,988
GORMAN, ANTHONY L Ionic and Metabolic Basis of Visual Responses Boston University Boston, Massachusetts Etiology	5 R01 EY01157-03	89	04/01/76-03/31/77 04/01/74-03/31/77 J	47,049	19,064	66,113	147,953
GREEN, DANIEL G Functional Organization of the Retina University of Michigan Ann Arbor, Michigan Etiology	5 R01 EY00379-08	90	09/01/75-08/31/76 09/01/74-08/31/79 K	32,343	20,377	52,720	174,281
GREEN, WILLIAM R Ocular Clinico-Pathologic Correlation Johns Hopkins University Baltimore, Maryland Etiology Diagnosis	1 R01 EY01684-01	91	06/04/76-05/31/77 06/04/76-05/31/79 A	61,980	28,070	90,050	197,937
HALL, MICHAEL O The Biosynthesis of Visual Pigment Rhodopsin University of California, Los Angeles Jules Stein Eye Institute Los Angeles, California Etiology	5 R01 EY00046-07	92	11/01/75-11/30/76 11/01/72-11/30/77 J	53,094	18,207	71,301	192,204
HARGRAVE, PAUL A Rhodopsin Structure and Function Southern Illinois University Carbondale, Illinois Etiology	5 R01 EY01275-03	93	02/01/76-01/31/77 02/01/74-01/31/77 J	13,375	4,961	18,336	53,972
HAYES, KENNETH C Nutritional Retinal Degeneration in Cats Harvard University Boston, Massachusetts Etiology	2 R01 EY00631-06	94	06/01/76-05/31/77 06/01/76-05/31/79 J	31,985	18,551	50,536	108,950

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HELLER, JORAM Retinol Delivery to Pigment Epithelium and Neural Retina University of California, Los Angeles Jules Stein Eye Institute Los Angeles, California Etiology	2 R01 EY00704-06	95	06/01/76-05/31/77 06/01/76-05/31/81 J	42,881	14,665	57,546	199,001
HENKIND, PAUL Retinal Pathology and Circulation Montefiore Hospital and Medical Center Ophthalmology New York, New York Etiology Diagnosis	2 R01 EY00613-06	96	03/01/76-12/31/76 03/01/76-12/31/77 B	96,789	21,981	118,770	190,183
HINDS, JAMES W Serial Section Analysis of Developing Mouse Retina Boston University Anatomy Boston, Massachusetts Etiology	5 R01 EY01398-02	97	06/01/76-05/31/77 06/01/74-05/31/77 K	19,495	9,674	29,169	69,015
HIROSE, TATSUO Human VER and ERG with Focal Retinal Stimulation Eye Research Institute of Retina Foundation Retina Research Boston, Massachusetts Diagnosis	5 R01 EY01259-02	98	12/01/75-11/30/76 06/28/74-11/30/77 E	34,762	16,772	51,534	102,994
HOLLYFIELD, JOE G Experimental Analysis of Retinal Development Columbia University Ophthalmology New York, New York Etiology	5 R01 EY00624-06	99	01/01/76-02/28/77 01/01/74-02/28/77 J	13,094	6,764	19,858	99,030
HOLLYFIELD, JOE G Phagocytic Activity of the Pigment Epithelium Columbia University Ophthalmology New York, New York Etiology	1 R01 EY01632-01	100	05/01/76-04/30/77 05/01/76-04/30/81 J	31,225	7,611	38,836	144,205
Hood, Donald C Physiological Adjustment to Ambient Light Levels Columbia University Psychology New York, New York Etiology	1 R01 EY01877-01	101	09/30/76-09/29/77 09/30/76-09/29/78 K	19,641	5,655	25,296	34,387
HOPE, GEORGE M Cold Limits on Photoreceptor Viability and Function University of Louisville Ophthalmology Louisville, Kentucky Etiology	5 R01 EY01228-02	102	06/01/76-05/31/77 06/01/75-05/31/78 L(1)	16,100	4,046	20,146	50,425
HOWES, EDWARD L, JR Pathogenesis of Altered Ocular Vascular Permeability University of California, San Francisco Pathology San Francisco, California Etiology	5 R01 EY00056-07	103	11/01/75-11/30/76 11/01/74-11/30/79 G	28,557	6,054	34,611	121,096
HUBBELL, WAYNE L Molecular Basis of Membrane Excitation University of California, Berkeley Chemistry Berkeley, California Etiology	5 R01 EY00729-05	104	05/01/76-04/30/77 05/01/74-04/30/77 J	43,975	15,039	59,014	214,275
HUDSON, BRUCE S Electronic Structure of the Visual Polyenes Stanford University Chemistry Stanford, California Etiology	5 R01 EY01518-02	105	06/01/76-05/31/77 06/01/75-05/31/78 J	20,000	10,640	30,640	66,000

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INGLING, CARL R, JR Interaction Between Receptor Classes in the Retina Ohio State University Biophysics Columbus, Ohio Etiology	5 R01 EY00148-06	106	06/01/76-05/31/77 06/15/74-05/31/77 K	10,150	7,040	17,190	37,450
JACOBSON, BERNARD J Role of Hyalocytes in the Vitreous Boston Biomedical Research Institute Connective Tissue Research Boston, Massachusetts Etiology	5 R01 EY00810-03	107	02/01/76-01/31/77 02/01/74-01/31/77 I	39,218	20,581	59,799	113,569
KALSOW, CAROLYN M Autoantigens of the Guinea Pig Retina and Uvea University of Louisville Ophthalmology Louisville, Kentucky Etiology	5 R23 EY01516-02	108	02/01/76-01/31/77 02/01/75-01/31/78 G	7,500	2,275	9,775	22,500
KAPLAN, MICHAEL W Optical Studies of Photoreceptor Function Good Samaritan Hospital and Medical Center Ophthalmology and Neurological Sciences Portland, Oregon Etiology	1 R01 EY01779-01	109	05/01/76-04/30/77 05/01/76-04/30/79 J	49,613	12,575	62,188	119,914
KARPLUS, MARTIN Electronic Structure of Biomolecules Harvard University Chemistry Cambridge, Massachusetts Etiology	5 R01 EY00062-07	110	03/01/76-02/28/77 03/01/73-02/28/77 J	21,543	11,741	33,284	88,558
KEAN, EDWARD L Glycolipid and Glycoprotein Metabolism in Eye Tissue Case Western Reserve University Surgery Cleveland, Ohio Etiology	5 R01 EY00393-09	111	04/01/76-03/31/77 04/01/73-03/31/78 J	59,847	29,175	89,022	260,376
KEEFE, J RICHARD Cytology of Retinal Differentiation University of Louisville Anatomy Louisville, Kentucky Etiology	5 R01 EY01676-02	112	06/01/76-05/31/77 06/15/75-05/31/78 K	40,292	15,275	55,567	131,055
KLIGER, DAVID S Investigation of the Bleaching Stages of Rhodopsin University of California, Santa Cruz Chemistry Santa Cruz, California Etiology	5 R01 EY00983-04	113	02/01/76-03/31/77 02/01/75-03/31/77 J	19,943	6,821	26,764	43,536
KNIGHT, BRUCE W, JR Mathematical Analyses of Neural Networks Rockefeller University Biophysics New York, New York Etiology	5 R01 EY0428-02	114	09/01/75-08/31/76 09/01/74-08/31/77 K	42,135	15,109	57,244	131,524
KNIGHTON, ROBERT W Electrical Stimulation of the Vertebrate Retina University of Miami Ophthalmology Miami, Florida Etiology Diagnosis	5 R01 EY01432-02	115	06/01/76-05/31/77 06/01/75-05/31/78 K	25,131	6,895	32,026	79,993
KOHLER, BRYAN E Spectroscopic Studies of the Visual Pigments Wesleyan University Chemistry Middletown, Connecticut Etiology	1 R01 EY01733-01	116	05/01/76-04/30/77 05/01/76-04/30/80 J	65,567	13,154	78,721	148,627



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KORENBROT, JUAN I Rhodopsin and Transduction in Rod Photoreceptors University of California, San Francisco San Francisco, California Etiology	5 R01 EY01586-02	117	06/01/76-05/31/77 06/01/75-05/31/78 J	41,825	13,962	55,787	144,043
KRAMER, STEVEN G Retinal Dopamine and ERG Flicker Suppression University of California, San Francisco San Francisco, California Etiology	1 R01 EY01373-01	118	06/01/74-05/31/78 06/01/74-05/31/79 K	*			72,926
KROFF, ALLEN Photochemistry of the Visual Pigments Amherst College Chemistry Amherst, Massachusetts Etiology	5 R01 EY00201-15	119	09/01/75-12/31/76 09/01/74-12/31/78 J	11,600	6,060	17,660	91,425
LAI, YIN-LOK Hereditary Retinal Regeneration in Wag/Rij Rats Yale University Health Science Resources New Haven, Connecticut Etiology	1 R01 EY01769-01	120	05/01/76-04/30/77 05/01/76-04/30/79 A	49,935	16,853	66,788	149,828
Laing, Ronald A Objective Focusing Fundus Camera Boston University Ophthalmology Boston, Massachusetts Diagnosis	1 R01 EY01636-01	121	09/17/76-08/31/77 09/17/76-08/31/78 E	21,701	10,069	31,770	30,804
LAM, DOMINIC M Neurotransmitters in the Visual System Harvard University Physiology Boston, Massachusetts Etiology	5 R01 EY01471-02	122	09/01/75-08/31/76 09/01/74-08/31/77 K	32,764	11,585	44,349	105,434
LAM, KWOK-WAI Biochemistry and Cytology of Subretinal Fluids Albany Medical College Ophthalmology Albany, New York Etiology	5 R01 EY01464-02	123	06/01/76-05/31/77 06/01/75-05/31/77 F	30,100	14,102	44,202	59,000
LA VAIL, MATTHEW M Cellular Mechanisms of Inherited Retinal Degeneration Children's Hospital Medical Center Neurology-Neuropathology Boston, Massachusetts Etiology	5 R01 EY01202-04	124	10/01/75-06/30/76 10/01/73-06/30/76 A	42,730	19,658	62,388	157,826
LAWWILL, THEODORE Clinical ERG with Photopic Patterned Stimuli University of Louisville Ophthalmology Louisville, Kentucky Etiology Diagnosis	5 R01 EY00412-06	125	04/01/75-12/31/76 04/01/73-12/31/76 A	*			71,260
LEURE-DU PREE, ALPHONSE E Retinal Zinc: Cellular Location and Visual Function Pennsylvania State University Hershey Medical Center Anatomy Hershey, Pennsylvania Etiology	5 R01 EY01438-02	126	06/01/76-05/31/77 06/01/75-05/31/78 J	21,777	8,189	29,966	71,632
LEWIS, AARON Tunable Laser Raman Spectroscopy of the Visual Process Cornell University Applied and Engineering Physics Ithaca, New York Etiology	5 R01 EY01377-02	127	09/01/75-08/31/76 09/01/74-08/31/77 J	29,199	13,334	42,533	184,124

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LIEBMAN, PAUL A Microphotometric Studies on Retinal Rods and Cones University of Pennsylvania Philadelphia, Pennsylvania Etiology	5 R01 EY00012-13	128	09/01/75-08/31/76 09/01/74-08/31/79 J	68,740	29,912	98,652	292,705
LISMAN, JOHN E Adaptation in Invertebrate Photoreceptors Brandeis University Waltham, Massachusetts Etiology	5 R01 EY01496-03	129	06/01/76-05/31/77 06/01/74-05/31/77 K	26,467	14,670	41,137	88,181
LITMAN, BURTON J Role of Macromolecules in Photoreceptor Membranes University of Virginia Charlottesville, Virginia Etiology	5 R01 EY00548-05	130	06/01/76-05/31/77 06/01/74-05/31/77 J	23,296	8,099	31,395	45,844
LITTLE, HUNTER L Role of Abnormal Hemorrhage in Diabetic Retinopathy Palo Alto Medical Research Foundation Ophthalmology Palo Alto, California Etiology	5 R01 EY01254-02	131	05/01/76-04/30/77 05/01/74-04/30/77 B	61,725	24,310	86,035	178,725
LIZZI, FREDERIC L Ultrasonic Evaluation of Ocular Tissues Riverside Research Institute New York, New York Diagnosis	5 R01 EY01212-03	132	05/01/76-04/30/77 05/01/74-04/30/77 D	49,771	39,221	88,992	150,235
LIZZI, FREDERIC L Study of Ultrasonically Induced Ocular Damage Riverside Research Institute New York, New York Diagnosis	5 R01 EY01480-02	133	09/01/75-08/31/76 09/01/74-08/31/77 D	64,520	49,840	114,360	195,943
LOLLEY, RICHARD N Maturation of Metabolism in Normal and Dystrophic Retina University of California, Los Angeles Los Angeles, California Etiology	5 R01 EY00395-08	134	02/01/76-01/31/77 02/01/75-01/31/78 J	31,609	5,917	37,526	95,061
MACHEMER, ROBERT Vitreotomy through the Pars Plana University of Miami Miami, Florida Treatment	5 R01 EY00841-05	135	06/01/76-05/31/77 06/01/72-05/31/77 I	48,860	20,868	69,728	210,924
MACLEOD, DONALD I Retinal Mechanisms in Human Vision University of California, San Diego La Jolla, California Etiology	5 R01 EY01711-01	136	05/01/76-04/30/77 05/01/76-04/30/79 K	39,079	10,804	49,883	109,864
MARMOR, MICHAEL F Interaction Between Retina and Pigment Epithelium Stanford University Stanford, California Etiology	5 R01 EY01678-02	137	06/01/76-05/31/77 06/15/75-05/31/78 J	46,277	21,099	67,376	165,497
MASLAND, RICHARD H Neurotransmission in Mammalian Retina Massachusetts General Hospital Boston, Massachusetts Etiology	5 R01 EY01075-03	138	04/01/76-03/31/77 04/01/74-03/31/77 K	28,790	12,293	41,083	92,808

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MAUMENEE, IRENE H Genetics in Ophthalmology Johns Hopkins University Baltimore, Maryland Etiology	R01 EY01773-01 Ophthalmology	139	06/01/76-05/31/77 06/01/76-05/31/81 A	46,300	22,224	68,524	216,552
McConnell, David G Studies of Retinal Rod Cyclic GMP Phosphodiesterase Michigan State University East Lansing, Michigan Etiology	1 R01 EY01574-01 GMP Phosphodiesterase Biomechanics	140	09/30/76-09/30/77 09/30/76-09/30/79 J	28,056	11,196	39,252	94,606
McCORMICK, BRUCE H Image Processing for Clinical Ophthalmoscopy University of Illinois, Chicago Circle Information Engineering Chicago, Illinois Etiology	2 R01 EY01261-02 Ophthalmoscopy	141	03/01/76-12/31/76 03/01/76-12/31/78 B	177,070	64,716	241,786	522,104
McFARLAND, WILLIAM N Environmental Light and Visual Pigments Cornell University Ithaca, New York Etiology	5 R01 EY00323-11 Ecology, Evolution and Systems	142	05/01/76-04/30/77 05/01/75-04/30/78 J	23,910	14,107	38,017	89,685
McREYNOLDS, JOHN S Functional Organization of the Vertebrate Retina University of Michigan Ann Arbor, Michigan Etiology	1 R01 EY01653-01 Physiology	143	05/01/76-04/30/77 05/01/76-04/30/79 K	34,453	11,236	45,689	80,605
MEYERS, ROBERTA L Pathogenesis of Experimental Allergic Uveitis University of California, Los Angeles Jules Stein Eye Institute Los Angeles, California Etiology Treatment	5 R01 EY01309-03	144	04/01/76-03/31/77 04/01/74-03/31/77 G	25,928	8,867	34,795	73,079
MILLER, ROBERT F Glial Contributions to Retinal Function State University of New York at Buffalo Buffalo, New York Etiology	5 R01 EY00844-05 Physiology	145	02/01/76-01/31/77 02/01/75-01/31/78 K	19,688	9,556	29,244	88,672
MILLER, WILLIAM H Structure and Function of Eyes Yale University New Haven, Connecticut Etiology	5 R01 EY00089-12 Ophthalmology and Visual Sciences	146	02/01/76-01/31/77 02/01/75-01/31/80 J	37,329	19,734	57,063	160,174
MONJAN, ANDREW A Ocular Disease of Viral Etiology Johns Hopkins University Baltimore, Maryland Etiology	2 R01 EY00938-04 Epidemiology	147	03/01/76-12/31/76 03/01/76-12/31/78 G	31,627	13,357	44,984	114,492
MUKAI, NORITSUGU Pathogenesis of Retinoblastomas Eye Research Institute of Retina Foundation Boston, Massachusetts Etiology	5 R01 EY01667-02	148	06/01/76-05/31/77 06/01/75-05/31/78 D	20,850	6,512	27,362	62,645
MUNZ, FREDERICK W Genetics of Visual Pigments University of Oregon Eugene, Oregon Etiology	5 R01 EY00324-11 Biology	149	05/01/76-04/30/77 05/01/75-04/30/78 J	31,828	6,269	38,097	94,676



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NAKA, KEN-ICHI Function of Neuron Networks in Vertebrate Visual Systems University of Texas Medical Branch, Galveston Physiology and Biophysics Galveston, Texas Etiology	7 R01 EY01897-01	150	05/01/76-04/30/77 05/01/76-04/30/78 K	72,336	28,600	100,936	145,755
NAKANISHI, KOJI Pigment Formation with Retinals Columbia University Chemistry New York, New York Etiology	1 R01 EY01811-01	151	05/01/76-04/30/77 05/01/76-04/30/79 J	54,453	7,580	62,033	114,096
NAKANISHI, KOJI Structural and Conformational Studies of Visual Pigments Columbia University Chemistry New York, New York Etiology	2 R01 EY01253-03	152	03/01/76-11/30/76 03/01/76-11/30/78 J	14,235	3,250	17,485	46,579
NELSON, LARRY A IX International Biometric Conference North Carolina State University, Raleigh Institute of Statistics Raleigh, North Carolina	1 R13 EY01902-01	153	06/01/76-05/31/77 06/01/76-05/31/77 A	2,000	0	2,000	2,000
NEWMAN, NANCY M Evaluation of the Retinal Nerve Fiber Layer University of the Pacific Ophthalmology San Francisco, California Etiology Diagnosis	5 R01 EY01249-03	154	05/01/76-04/30/77 05/01/74-04/30/77 K	48,866	14,282	63,148	143,088
NOELL, WERNER K Vulnerability of the Retina to Light and Other Agents State University of New York at Buffalo Physiology Buffalo, New York Etiology	5 R01 EY00297-11	155	06/01/76-05/31/77 06/01/74-05/31/77 J	48,718	20,960	69,678	150,563
NOLTE, JOHN F Photoreceptor Interactions University of Colorado Medical Center Anatomy Denver, Colorado Etiology	5 R01 EY01155-03	156	05/01/75-04/30/77 05/01/73-04/30/77 K	*			57,936
O'BRYAN, PAUL M, JR Early Receptor Potentials in Single Vertebrate Cones Boston University Physiology Boston, Massachusetts Etiology	1 R01 EY01812-01	157	05/01/76-04/30/77 05/01/76-04/30/79 K	47,200	11,283	58,483	138,540
O'CONNOR, G RICHARD Ocular Toxoplasmosis University of California, San Francisco Ophthalmology San Francisco, California Etiology	5 R01 EY01204-03	158	11/01/75-10/31/76 11/01/73-10/31/76 G	52,180	17,846	70,026	157,839
O'Donnell, James J Retinitis Pigmentosa—Inborn Error of RPE Phagocytosis University of California, San Francisco Ophthalmology San Francisco, California Diagnosis	1 R01 EY01786-01	159	09/30/76-09/29/77 09/30/76-09/29/79 A	63,694	16,441	80,135	193,019
O'STEEN, WENDALL K Reproductive Hormones and Retinal Degeneration Emory University Anatomy Atlanta, Georgia Etiology	5 R01 EY01566-02	160	06/01/76-05/31/77 06/01/75-05/31/78 A	24,742	9,602	34,344	74,837

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OGDEN, THOMAS E Non-Linear Analysis of Retinal Potentials Estelle Doheny Eye Foundation Los Angeles, California Diagnosis	1 R01 EY01775-01	161	06/04/76-05/31/77 06/04/76-05/31/79 K	33,250	14,279	47,529	90,707
OGDEN, THOMAS E A Study of Structure and Function of Retinal Neurones Estelle Doheny Eye Foundation Los Angeles, California Etiology Diagnosis	5 R01 EY01671-02	162	06/30/76-06/29/77 06/30/75-06/29/77 K	32,269	16,909	49,178	64,431
OH, JANG O Recurrent Herpes Simplex Uveitis University of California, San Francisco Proctor Foundation for Research in Ophthalmology San Francisco, California Etiology	5 R01 EY00964-02	163	05/01/76-04/30/77 05/01/74-04/30/77 G	62,598	21,238	83,836	175,933
OLSON, MARK D The Fine Structural Development of Bruch's Membrane George Washington University Anatomy Washington, District of Columbia Etiology	5 R01 EY01511-02	164	06/30/76-06/29/77 06/30/75-06/29/78 J	24,698	9,627	34,325	67,873
OSTROY, SANFORD E Related Molecular and Physiological Events in Vision Purdue University Biological Sciences West Lafayette, Indiana Etiology	5 R01 EY00413-08	165	09/01/75-04/30/77 09/01/71-04/30/77 J	24,684	12,403	37,087	113,316
PAK, WILLIAM L Sensory Excitation and Information Flow in the Retina Purdue University Biological Sciences West Lafayette, Indiana Etiology	5 R01 EY00033-07	166	10/01/75-11/30/76 10/01/74-11/30/79 K	52,477	28,651	81,128	235,898
PANNBACKER, RICHARD G Cyclic Nucleotide Function in Retinal Photoreceptors University of Colorado Medical Center Surgery Denver, Colorado Etiology	5 R01 EY01171-04	167	01/01/76-12/31/76 01/01/75-12/31/77 J	25,070	6,297	31,367	98,233
PAPERMASTER, DAVID S Membrane Biosynthesis in Normal and Dystrophic Retina Yale University Pathology New Haven, Connecticut Etiology	2 R01 EY00845-02	168	05/01/75-08/31/76 05/01/75-08/31/78 A	*			94,053
PATZ, ARNALL Studies of Retinal Ischemia Johns Hopkins University Ophthalmology Baltimore, Maryland Etiology	5 R01 EY01008-04	169	09/01/75-08/31/76 09/01/72-08/31/77 B	53,511	28,186	81,697	291,028
PATZ, ARNALL Studies on the Retina and Retinal Vessels Johns Hopkins University Ophthalmology Baltimore, Maryland Etiology Diagnosis	5 R01 EY00205-16	170	05/01/75-04/30/77 05/01/71-04/30/77 B	*			216,792
PATZ, ARNALL Diabetic Retinopathy Johns Hopkins University Ophthalmology Baltimore, Maryland Etiology Diagnosis	5 R01 EY00250-13	171	05/01/76-04/30/77 05/01/74-04/30/77 B	40,653	19,513	60,166	118,986

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PAUTLER, EUGENE L Transretinal Potential and Sugar Transport in Mammals Colorado State University Physiology and Biophysics Fort Collins, Colorado Etiology	1 R01 EY01643-01	172	06/11/76-05/31/77 06/11/76-05/31/79 J	27,446	11,940	39,386	86,716
PEYMAN, GHOLAM A Intravitreal Surgery Techniques University of Illinois Medical Center Ophthalmology Chicago, Illinois Treatment	5 R01 EY01107-03	173	01/01/75-07/30/76 01/01/73-07/30/76 I	*			81,581
PHELPS, DALE L Alpha-Tocopherol in Retinal Oxygen Toxicity University of California, Los Angeles Pediatrics Los Angeles, California Etiology	5 R01 EY01507-02	174	06/01/76-05/31/77 06/01/75-05/31/77 B	33,191	11,351	44,542	66,035
PINTER, ROBERT B Quantitative Determination of Retinal Function University of Washington Electrical Engineering Seattle, Washington Etiology	5 R01 EY01285-02	175	06/01/76-05/31/77 06/01/74-05/31/78 K	17,982	6,036	24,018	84,438
PINTO, LAWRENCE H Ionic Mechanisms for Retinal Neuron Potentials Purdue University Biological Sciences West Lafayette, Indiana Etiology	5 R01 EY01221-03	176	04/01/76-03/31/77 04/01/74-03/31/77 K	18,928	10,972	29,900	87,435
POMERANTZEFF, OLEG Improvements in Continuous Laser Photocoagulation Eye Research Institute of Retina Foundation Boston, Massachusetts Etiology Treatment	5 R01 EY01572-02	177	06/01/76-05/31/77 06/01/75-05/31/77 B	50,185	13,158	63,343	77,308
POTTS, ALBERT M The Action of Drugs and Poisons on the Eye University of Louisville Ophthalmology Louisville, Kentucky Etiology	1 R01 EY01591-01A1	178	06/30/76-06/29/77 06/30/76-06/29/79 L(1)	60,301	24,828	85,129	180,385
POTTS, ALBERT M Experimental and Clinical Visual Electrophysiology University of Louisville Ophthalmology Louisville, Kentucky Etiology Diagnosis	7 R01 EY01669-01	179	05/01/75-01/31/77 05/01/75-01/31/77 A	*			57,694
POTTS, ALBERT M Pathophysiological Studies on Optic Nerve University of Louisville Ophthalmology Louisville, Kentucky Etiology	1 R01 EY01704-01	180	06/30/75-08/31/76 06/30/75-08/31/80 L(1)	*			363,140
PRENDERGAST, ROBERT A Pathogenesis of Uveitis Johns Hopkins University Ophthalmology Baltimore, Maryland Etiology	5 R01 EY00279-13	181	06/01/76-05/31/77 06/01/75-05/31/80 G	41,720	20,026	61,746	172,942
PROENZA, LUIS M Electrophysiology of Retinal Cells in Vision University of Georgia Psychology Athens, Georgia Etiology	2 R01 EY00973-04	182	03/01/76-12/31/76 03/01/76-12/31/80 K	18,775	6,775	25,550	70,069

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
PURPLE, RICHARD L Studies on Integrative Mechanisms of Neurons University of Minnesota Minneapolis, Minnesota Etiology	5 R01 EY00293-11	183	06/01/76-05/31/77 06/01/75-05/31/80 K	24,442	7,144	31,586	102,356
RATLIFF, FLOYD Electrical Activity, Single Receptors, Neurons of Eye Rockefeller University New York, New York Etiology	5 R01 EY00188-21	184	02/01/76-01/31/77 02/01/75-01/31/80 K	57,275	21,114	78,389	257,756
RAVIOLA, ELIO Freeze-Fracture Studies on the Retina Harvard University Boston, Massachusetts Etiology	5 R01 EY01344-02	185	06/01/76-05/31/77 06/01/74-05/31/77 J	28,550	16,559	45,109	80,708
RECORDS, RAYMOND E Neovascular Macular Disease: Pathogenesis and Therapy University of Nebraska Medical Center Ophthalmology Omaha, Nebraska Treatment	5 R01 EY00827-03	186	04/01/76-03/31/77 04/01/74-03/31/77 E	6,538	2,345	8,883	54,266
REDBURN, DIANNA A Identification of Transmitter Agents in Retina University of Texas Health Science Center Neurostructure and Function Houston, Texas Etiology	1 R01 EY01655-01	187	06/30/76-06/29/77 06/30/76-06/29/79 K	42,852	11,974	54,826	129,545
REFOJO, MIGUEL F Synthetic Hydrophilic Polymers for Eye Surgery Eye Research Institute of Retina Foundation Cornea Research Boston, Massachusetts Treatment	5 R01 EY00327-11	188	01/01/76-12/31/76 01/01/73-12/31/77 I	52,472	28,551	81,023	198,324
REID, TED W Role of Glutamine Transferase in the Retina Yale University New Haven, Connecticut Ophthalmology and Visual Sciences Etiology	1 R01 EY01656-01	189	05/01/76-04/30/77 05/01/76-04/30/79 J	33,485	15,681	49,166	103,121
REIF-LEHRER, LIANE Biochemical Control in the Normal and Diseased Retina Harvard University Boston, Massachusetts Ophthalmology Etiology	2 R01 EY00374-09	190	04/01/76-03/31/77 04/01/76-03/31/79 J	79,511	26,387	105,898	243,762
RIPPS, HARRIS Visual Adaptation in the Vertebrate Retina New York University New York, New York Ophthalmology Etiology Diagnosis	2 R01 EY00285-12	191	03/01/76-12/31/76 03/01/76-12/31/80 K	87,491	39,197	126,688	461,030
RIVA, CHARLES E Human Retinal Blood Flow and Laser Velocimetry Eye Research Institute of Retina Foundation Retina Research Boston, Massachusetts Etiology Diagnosis	2 R01 EY01303-02	192	03/01/76-12/31/76 03/01/76-12/31/77 B	23,142	12,419	35,561	52,287
RIVA, CHARLES E Study of Ocular Blood Flow with Dye Dilution Method Eye Research Institute of Retina Foundation Retina Research Boston, Massachusetts Etiology	5 R01 EY01242-03	193	09/01/75-02/28/77 09/01/73-02/28/77 B	35,398	16,956	52,354	108,770



Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	Direct Costs				Direct Costs Recom- mended For Project Period
				FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded		
ROBB, RICHARD M Histochemistry of Phosphodiesterase in the Retina Children's Hospital Medical Center Ophthalmology Boston, Massachusetts Etiology	5 R01 EY01451-02	194	06/01/76-05/31/77 06/01/75-05/31/78 J	37,862	19,051	56,913		131,624
ROBERTSON, DENNIS M Chorioretinopathy Mayo Foundation Ophthalmology Rochester, Minnesota Treatment	1 R01 EY01709-01	195	06/30/76-06/29/77 06/30/76-06/29/77 E	35,000	13,164	48,164		35,000
ROCKEY, JOHN H Primary Structural Studies of Visual Pigments Presbyterian-University of Pennsylvania Medical Center Ophthalmology Philadelphia, Pennsylvania Etiology	5 R01 EY01193-04	196	09/01/75-08/31/76 09/01/74-08/31/77 J	35,648	19,787	55,435		144,152
Ryan, Stephen J An Experimental Approach to Maculopathy University of Southern California Ophthalmology Los Angeles, California Etiology	1 R01 EY01545-01	197	09/30/76-09/29/77 09/30/76-09/29/79 E	67,613	9,675	77,288		184,447
SAARI, JOHN C Biochemistry of the Retina and Pigment Epithelium University of Washington Ophthalmology Seattle, Washington Etiology	5 R01 EY00529-06	198	04/01/76-03/31/77 04/01/74-03/31/77 J	33,438	10,832	44,270		104,454
SCHMIDT, SUSAN Y Biochemical Studies of Retina and Pigment Epithelium Harvard University Ophthalmology Boston, Massachusetts Etiology	1 R01 EY01687-01	199	05/01/76-04/30/77 05/01/76-04/30/79 J	68,919	15,785	84,704		160,654
SLATTER, DOUGLAS H Experimental Canine Ocular Atherosclerosis Michigan State University Veterinary Surgery and Medicine East Lansing, Michigan Etiology	7 R23 EY01816-01	200	01/01/76-08/31/76 01/01/76-08/31/76 B	3,000	0	3,000		3,000
SLATTER, DOUGLAS H Experimental Canine Ocular Atherosclerosis Colorado State University Clinical Sciences Fort Collins, Colorado Etiology	5 R23 EY01450-02	201	09/01/75-12/31/75 09/01/74-12/31/75 B	7,500	0	7,500		14,946
SLOAN, SHERWIN H Cyclic Nucleotide Metabolism in the Human Retina University of California, Los Angeles Ophthalmology Los Angeles, California Etiology	5 R23 EY01447-02	202	06/01/76-05/31/77 06/01/75-05/31/77 J	7,500	2,565	10,065		15,000
SOELDNER, JOHN S Pathogenesis of Microangiopathy in Diabetes Joslin Diabetes Foundation Elliott P Joslin Research Laboratory Boston, Massachusetts Etiology Diagnosis	5 R01 EY01421-15	203	12/01/75-11/30/76 12/01/74-11/30/77 B	47,164	17,673	64,837		141,644
SOKOL, SAMUEL ERG and VECF as Indices of Photopic Dysfunction New England Medical Center Ophthalmology Boston, Massachusetts Etiology Diagnosis	5 R01 EY00926-03	204	04/01/76-03/31/77 04/01/74-03/31/79 E	17,366	4,093	21,459		88,972

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs
							Recommended For Project Period
SOKOLLU, ADNAN Study of Eye Physiology and Disease by Ultrasound Case Western Reserve University Cleveland, Ohio Diagnosis	5 R01 EY00224-15	205	06/30/76-06/29/77 06/30/74-06/29/77 D	103,948	48,499	152,447	306,963
SREBRO, RICHARD Molecular Basis of Photoreceptor Activity State University of New York at Buffalo Buffalo, New York Etiology	2 R01 EY00435-08	206	06/30/76-06/29/77 06/30/76-06/29/79 J	51,167	19,696	70,863	150,539
STANLEY, H EUGENE Normal and Abnormal Mechanisms of Vision Massachusetts Institute of Technology Cambridge, Massachusetts Etiology	5 R01 EY01463-02	207	06/01/76-07/01/76 06/01/75-07/01/76 J	24,868	12,611	37,479	74,069
STEINBERG, ROY H Pigment Epithelial Ion Transport and Retinal Function University of California, San Francisco San Francisco, California Etiology	5 R01 EY01429-02	208	09/01/75-08/31/76 09/01/74-08/31/77 J	58,765	20,098	78,863	197,480
STELL, WILLIAM K Pathways for Color Vision in Retinas University of California, Los Angeles Jules Stein Eye Institute Los Angeles, California Etiology	2 R01 EY01190-04	209	05/01/76-04/30/77 05/01/76-04/30/81 K	88,356	30,218	118,574	256,667
STRYER, LUBERT Conformational Aspects of Visual Excitation Yale University New Haven, Connecticut Etiology	5 R01 EY01070-03	210	01/01/76-11/30/76 01/01/74-11/30/76 J	39,388	16,685	56,073	143,689
STURR, JOSEPH F Mechanisms of Visual Sensitivity Syracuse University Syracuse, New York Etiology	5 R01 EY01571-02	211	06/01/76-05/31/77 06/01/75-05/31/78 K	53,809	29,375	83,184	159,278
SWANN, DAVID A Chemistry and Biology of Vitreous Structural Proteins Massachusetts General Hospital Boston, Massachusetts Etiology	5 R01 EY01030-03	212	04/01/76-03/31/77 04/01/74-03/31/77 I	34,886	8,064	42,950	119,332
TOMITA, TSUNEO Electric Sign of Single Photoreceptors Keio University Tokyo, Japan Etiology	5 R01 EY00017-09	213	04/01/75-09/30/76 04/01/73-09/30/76 K	*			37,790
TROELSTRA, ARNE Quantitative Basis for Clinical Electroretinography Rice University Houston, Texas Etiology	5 R01 EY00921-02	214	06/01/76-05/31/77 06/01/75-05/31/78 A	35,054	11,518	46,572	112,832
TSAPOGAS, MAKIS J Thrombolytic Therapy in Retinal Vascular Occlusion Albany Medical School Albany, New York Treatment	5 R01 EY00794-03	215	09/01/75-08/31/76 09/01/73-08/31/76 B	3,140	3,625	6,765	59,957

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
Tso, MARK O Pathology of Retinal Dysfunction American Academy of Ophthalmology and Otolaryngology Ophthalmic Pathology Rochester, Minnesota Etiology	2 R01 EY00790-05	216	03/01/76-06/30/76 03/01/76-06/30/76 E	18,014	1,240	19,254	18,014
Tso, MARK O Pathology of Retinal Dysfunction University of Illinois Medical Center Chicago, Illinois Etiology	7 R01 EY01903-01	217	06/30/76-02/28/77 06/30/76-02/28/79 E	33,572	12,903	46,475	159,080
VAINISI, SAMUEL Studies on Ophthalmic Diseases University of Illinois Medical Center Chicago, Illinois Etiology	5 R01 EY00874-05	218	05/01/76-04/30/77 05/01/75-04/30/80 E	47,572	22,835	70,407	218,169
VAN HEUVEN, WICHARD A System Development to Study Ocular Vascular Dynamics Albany Medical College Albany, New York Etiology Diagnosis	5 R01 EY00791-05	219	05/01/76-04/30/77 05/01/75-04/30/77 B	29,600	8,898	38,498	77,800
WACKER, WALDON B Auto- and Iso-Immune Response to Ocular Tissues University of Louisville Louisville, Kentucky Etiology	2 R01 EY00254-10A1	220	05/01/74-11/30/76 05/01/74-11/30/77 G	*			89,925
WAGGONER, ALAN S Visual Excitation — Early Molecular Events Amherst College Amherst, Massachusetts Etiology	5 R01 EY00930-05	221	05/01/76-04/30/77 05/01/75-04/30/78 J	16,427	8,426	24,853	50,457
WALD, GEORGE Chemistry and Physiology of Visual Excitation Harvard University Cambridge, Massachusetts Etiology	5 R01 EY00508-07	222	09/01/75-08/31/76 09/01/74-08/31/79 J	48,156	30,333	78,489	221,866
WALLOW, INGOLF H The Blood-Retinal Barrier in Diabetic Retinopathy University of Wisconsin, Madison Madison, Wisconsin Etiology	1 R01 EY01634-01	223	05/01/76-04/30/77 05/01/76-04/30/79 B	39,465	16,562	56,027	128,783
WARSHEL, ARIEH Theoretical Studies of the Vision Process University of California, Los Angeles Los Angeles, California Etiology	1 R01 EY01766-01	224	06/01/76-05/31/77 06/01/76-05/31/79 J	19,169	5,862	25,031	59,384
WELCH, ASHLEY J Ocular Damage Due to Retinal Temperature Rise University of Texas, Austin Austin, Texas Etiology	5 R01 EY01162-03	225	04/01/76-03/31/77 04/01/74-03/31/77 L(1)	31,723	12,010	43,733	91,161
WERBLIN, FRANK S Membrane Mechanisms for Cell Function in Retina University of California, Berkeley Electronics Research Laboratory Berkeley, California Etiology	5 R01 EY00561-07	226	05/01/76-04/30/77 05/01/75-04/30/80 K	46,536	14,376	60,912	221,539

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
WINKLER, BARRY S Photoreceptor Electrogenesis: Dynamics and Controls Oakland University Biological Sciences Rochester, Michigan Etiology	5 R01 EY01219-02	227	06/01/76-05/31/77 06/01/75-05/31/78 J	36,730	14,743	51,473	117,294
WITKOVSKY, PAUL The Origin and Ionic Basis of the Electroretinogram State University of New York at Stony Brook Anatomical Sciences Stony Brook, New York Etiology	1 R01 EY01762-01	228	04/15/76-03/31/77 04/15/76-03/31/81 K	63,525	26,285	89,810	285,832
WONG, VERNON G Experimental Ocular Histoplasmosis in Primates Georgetown University Ophthalmology Washington, District of Columbia Etiology Treatment	5 R01 EY01443-02	229	09/01/75-08/31/76 09/01/74-08/31/76 G	36,461	13,162	49,623	76,048
WOOTEN, BILLY R Retinal Mosaicism in Females Carrying Color Blindness Brown University Psychology Providence, Rhode Island Etiology	5 R01 EY01512-02	230	06/01/76-05/31/77 06/01/75-05/31/78 J	19,076	7,411	26,487	101,235
WRIGHT, ALLEN K Size and Shape Determination of Rhodopsin in Solution University of Tennessee Center for the Health Sciences Biochemistry Memphis, Tennessee Etiology	1 R01 EY01701-01	231	06/01/76-05/31/77 06/01/76-05/31/79 J	44,899	9,107	54,006	97,286
WRIGHT, ANTHONY A Hue Discrimination Studies University of Texas Health Science Center Sensory Sciences Center Houston, Texas Etiology	5 R01 EY01256-02	232	06/01/76-05/31/77 06/01/75-05/31/78 J	19,763	6,622	26,385	68,080
WULFF, VERNER J A Study of Visual Coupling Reactions Masonic Foundation Medical Research and Human Welfare Laboratory Utica, New York Etiology	5 R01 EY00236-15	233	06/01/76-05/31/77 06/24/74-05/31/77 K	32,808	11,382	44,190	116,112
YAZULLA, STEPHEN Spatio-Chromatic Coding in Retinal Neurons State University of New York at Stony Brook Biological Sciences Stony Brook, New York Etiology	1 R01 EY01682-01	234	05/01/76-04/30/77 05/01/76-04/30/79 K	28,866	6,435	35,301	76,521
YGUERABIDE, JUAN Conformational Dynamics of Excitable Membranes University of California, San Diego Biology La Jolla, California Etiology	5 R01 EY01177-03	235	06/01/75-12/31/76 06/01/73-12/31/76 J	*			68,384
YOUNG, RICHARD W Histophysical and Histochemical Studies of the Eye University of California, Los Angeles Anatomy Los Angeles, California Etiology	5 R01 EY00095-15	236	05/01/76-04/30/77 05/01/75-04/30/80 J	68,470	22,995	91,465	294,994
Yu, HYUK Membrane Fluidity and Photoreceptor Function University of Wisconsin, Madison Chemistry Madison, Wisconsin Etiology	5 R01 EY01483-02	237	09/01/75-08/31/76 09/01/74-08/31/77 J	29,150	13,781	42,931	75,045



Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
ZIMMERMAN, LORENZ E Improved Diagnosis and Therapy in Ophthalmology Universities Associated for Research and Education in Pathology, Inc. Ophthalmic Pathology Branch Washington, District of Columbia Etiology Diagnosis	1 R01 EY01386-01	238	09/01/74-08/31/77 09/01/74-08/31/81 A	*			219,205
ZIMMERMAN, WILLIAM F Biochemistry of Visual Cell Renewal and Visual Cycles Amherst College Biology Amherst, Massachusetts Etiology	5 R01 EY00675-06	239	06/01/76-05/31/78 06/15/74-05/31/78 J	9,204	16,748	25,952	138,201
ZWAS, FRED Psychophysical Studies of Retinitis Pigmentosa Wayne State University Ophthalmology Detroit, Michigan Etiology Diagnosis	1 R01 EY01707-01	240	06/01/76-05/31/77 06/01/76-05/31/80 A	14,915	3,360	18,275	40,541
ZWENG, H CHRISTIAN The Uses of Lasers in Ophthalmic Diseases Stanford University Surgery Stanford, California Treatment	5 R01 EY00318-07	241	09/01/75-08/31/76 04/01/74-08/31/76 B	40,232	22,530	62,762	87,436
Total Active Grants for Program: 241			Total Dollars				
Total Grants for Program Receiving FY 1976 Funds: 219			for Program:	8,450,731	3,335,110	11,785,841+	29,859,740

\*Prior year funding

+ 23 grants received an additional \$265,417 in supplemental awards

Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
NATIONAL EYE INSTITUTE RESEARCH PROJECT GRANTS ACTIVE FY 1976 — SUBPROGRAM LISTING			
Problem Areas and Specific Disorders			
A. Developmental and Hereditary Disorders			
AGUIRRE, GUSTAVO D	Cone Degeneration — Structural and Functional Studies	University of Pennsylvania	89,056
BERSON, ELIOT L	Electrophysiological Studies of Retinal Degenerations	Harvard University	55,709
CARR, RONALD E	ERG and Psychophysical Studies in Retinal Disorders	New York University	108,985
FINKELSTEIN, DANIEL	Pathogenesis of Primary Retinitis Pigmentosa	Johns Hopkins University	72,568
FISHER, STEVEN K	Studies on the Developing and Adult Visual System	University of California, Santa Barbara	58,509
FROMM, PAUL O	Comparative Physiological Studies of Vertebrate Eyes	Michigan State University	33,476
GREEN, WILLIAM R	Ocular Clinico-Pathologic Correlation	Johns Hopkins University	90,050
LAI, YIN-LOK	Hereditary Retinal Regeneration in Wag / Rij Rats	Yale University	66,788
LA VAIL, MATTHEW M	Cellular Mechanisms of Inherited Retinal Degeneration	Children's Hospital Medical Center, Boston	62,388
LAWWILL, THEODORE	Clinical ERG with Photopic Patterned Stimuli	University of Louisville	*
MAUMENEE, IRENE H	Genetics in Ophthalmology	Johns Hopkins University	68,524
NELSON, LARRY A	IX International Biometric Conference	North Carolina State University, Raleigh	2,000-
O'Donnell, James J	Retinitis Pigmentosa — Inborn Error of RPE Phagocytosis	University of California, San Francisco	80,135
O'STEEN, WENDALL K	Reproductive Hormones and Retinal Degeneration	Emory University	34,344
PAPERMASTER, DAVID S	Membrane Biosynthesis in Normal and Dystrophic Retina	Yale University	*
POTTS, ALBERT M	Experimental and Clinical Visual Electrophysiology	University of Louisville	*
TROELSTRA, ARNE	Quantitative Basis for Clinical Electroretinography	Rice University	46,572
ZIMMERMAN, LORENZ E	Improved Diagnosis and Therapy in Ophthalmology	Universities Associated for Research and Education in Pathology, Inc.	*
ZWAS, FRED	Psychophysical Studies of Retinitis Pigmentosa	Wayne State University	18,275
Total Active Grants for Area: 19			
Total Grants for Area Receiving FY 76 Funds: 14			
Total Dollars for Area:			807,244
B. Diabetic Retinopathy and Other Vascular and Circulatory Abnormalities			
BELLHORN, ROY W	Vascular Role in Experimental Retinopathies	Montefiore Hospital and Medical Center	41,499
BOGGS, THOMAS R, JR	Prematurity, Vitamin E and Retrolental Fibroplasia	Pennsylvania Hospital	52,500
CASTANY, MARIE A	Effects of Blood pO <sub>2</sub> , pCO <sub>2</sub> and pH on Retinal Vessels	Eye Research Institute of Retina Foundation	*
CHEN, CHUNG-HO	Biochemical Studies of Proliferative Retinopathies	Johns Hopkins University	101,415
DAVID, NOBLE J	Experimental Fluorescein Angiography	University of Miami	65,804
DE VENECIA, GUILLERMO B	The Eye in Malignant Hypertension	University of Wisconsin, Madison	66,973
DELORI, FRANCOIS, C	Study of Hemodynamics of Choroidal Circulation	Eye Research Institute of Retina Foundation	39,997
ENGERMAN, RONALD L	Study of Diabetic Retinopathy	University of Wisconsin, Madison	153,985
FINKELSTEIN, DANIEL	Experimental Retinal Neovascularization	Johns Hopkins University	61,905
FINKELSTEIN, DANIEL	Branch Vein Occlusion: Natural History and Treatment	Johns Hopkins University	51,800

Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
FLYNN, JOHN T	Retrolental Fibroplasia: The Evolution of the Lesion	University of Miami	75,174
Frank, Robert N	Retinal Microvessels: Tissue Culture and Biochemistry	Wayne State University	24,121
GIBBS, GORDON E	Retinal Microaneurysms, Effect of Hypophysectomy	University of Nebraska Medical Center	*
HENKIND, PAUL	Retinal Pathology and Circulation	Montefiore Hospital and Medical Center	118,770
LITTLE, HUNTER L	Role of Abnormal Hemorrhology in Diabetic Retinopathy	Palo Alto Medical Research Foundation	86,035
MCCORMICK, BRUCE H	Image Processing for Clinical Ophthalmoscopy	University of Illinois, Chicago Circle	241,786
PATZ, ARNALL	Diabetic Retinopathy	Johns Hopkins University	60,166
PATZ, ARNALL	Studies on the Retina and Retinal Vessels	Johns Hopkins University	*
PATZ, ARNALL	Studies of Retinal Ischemia	Johns Hopkins University	81,697
PHELPS, DALE L	Alpha-Tocopherol in Retinal Oxygen Toxicity	University of California, Los Angeles	44,542
POMERANTZEFF, OLEG	Improvements in Continuous Laser Photocoagulation	Eye Research Institute of Retina Foundation	63,343
RIVA, CHARLES E	Human Retinal Blood Flow and Laser Velocimetry	Eye Research Institute of Retina Foundation	35,561
RIVA, CHARLES E	Study of Ocular Blood Flow with Dye Dilution Method	Eye Research Institute of Retina Foundation	52,354
SLATTER, DOUGLAS H	Experimental Canine Ocular Atherosclerosis	Colorado State University	7,500
SLATTER, DOUGLAS H	Experimental Canine Ocular Atherosclerosis	Michigan State University	3,000
SOELDNER, JOHN S	Pathogenesis of Microangiopathy in Diabetes	Joslin Diabetes Foundation	64,837
TSAPOGAS, MAKIS J	Thrombolytic Therapy in Retinal Vascular Occlusion	Albany Medical College	6,765
VAN HEUVEN, WICHARD A	System Development to Study Ocular Vascular Dynamics	Albany Medical College	38,498
WALLOW, INGOLF H	The Blood-Retinal Barrier in Diabetic Retinopathy	University of Wisconsin, Madison	56,027
ZWENG, H CHRISTIAN	The Uses of Lasers in Ophthalmic Diseases	Stanford University	62,762
Total Active Grants for Area: 30			
Total Grants for Area Receiving FY 76 Funds: 26			
Total Dollars for Area:			1,734,695

## C. Myopia

## D. Tumors

ALBERT, DANIEL M	Histopathologic Study of Pigmented Ocular Tumors	Yale University	29,389
COLEMAN, D JACKSON	Ultrasonic Evaluation of Ocular Tissues	Columbia University	69,920
DUPONT, BO	Spontaneous Regression in Retinoblastoma	Sloan-Kettering Institute for Cancer Research	52,135
FEDERMAN, JAY L	Tumor-Associated Antibodies Against Ocular Melanomas	Wills Eye Hospital	28,312
FRANK, KAY E	Ocular Injury by Ultrasound	Case Western Reserve University	11,250
FR/UNFELDER, FREDERICK T	Treatment of Intraocular Tumors	University of Arkansas Medical Sciences Campus	*
LIZZI, FREDERIC L	Study of Ultrasonically Induced Ocular Damage	Riverside Research Institute	114,360
LIZZI, FREDERIC L	Ultrasonic Evaluation of Ocular Tissues	Riverside Research Institute	88,992
MUKAI, NORITSUGU	Pathogenesis of Retinoblastomas	Eye Research Institute of Retina Foundation	27,362

FY 1976  
Total  
Awarded

Principal Investigator	Title of Project	Institution	
SOKOLLU, ADNAN	Study of Eye Physiology and Disease by Ultrasound	Case Western Reserve University	152,447
Total Active Grants for Area: 10			
Total Grants for Area Receiving FY 76 Funds: 9			Total Dollars for Area: 574,167
<b>E. Macular Diseases</b>			
ALVARADO, JORGE A	Pathogenesis of Macular Degeneration	University of California, San Francisco	45,002
FINE, STUART L	Clinicogenetic Studies of Best's Macular Dystrophy	Johns Hopkins University	49,490
FITZGERALD, CONSTANCE R	Photocoagulation Treatment of Maculopathy	University of Florida	40,227
HIROSE, TATSUO	Human VER and ERG with Focal Retinal Stimulation	Eye Research Institute of Retina Foundation	51,534
Laing, Ronald A	Objective Focusing Fundus Camera	Boston University	31,770
RECORDS, RAYMOND E	Neovascular Macular Disease: Pathogenesis and Therapy	University of Nebraska Medical Center	8,883
ROBERTSON, DENNIS M	Chorioretinopathy	Mayo Foundation	48,164
Ryan, Stephen J	An Experimental Approach to Maculopathy	University of Southern California	77,288
SOKOL, SAMUEL	ERG and VECF as Indices of Photopic Dysfunction	New England Medical Center Hospital	21,459
Tso, MARK O	Pathology of Retinal Dysfunction	American Academy of Ophthalmology and Otolaryngology	19,254
Tso, MARK O	Pathology of Retinal Dysfunction	University of Illinois Medical Center	46,475
VAINISI, SAMUEL	Studies on Ophthalmic Diseases	University of Illinois Medical Center	70,407
Total Active Grants for Area: 12			
Total Grants for Area Receiving FY 76 Funds: 10			Total Dollars for Area: 400,895
<b>F. Retinal Detachment</b>			
LAM, KWOK-WAI	Biochemistry and Cytology of Subretinal Fluids	Albany Medical College	44,202
Total Active Grants for Area: 1			
Total Grants for Area Receiving FY 76 Funds: 1			Total Dollars for Area: 44,202
<b>G. Inflammatory Disorders</b>			
CHAR, DEVRON H	Uveitis: Specific and Nonspecific Cellular Reactivity	University of California, San Francisco	61,594
HOWES, EDWARD L, JR	Pathogenesis of Altered Ocular Vascular Permeability	University of California, San Francisco	34,611
KALSOW, CAROLYN M	Autoantigens of the Guinea Pig Retina and Uvea	University of Louisville	9,775
MEYERS, ROBERTA L	Pathogenesis of Experimental Allergic Uveitis	University of California, Los Angeles	34,795
MONJAN, ANDREW A	Ocular Disease of Viral Etiology	Johns Hopkins University	44,984
O'CONNOR, G RICHARD	Ocular Toxoplasmosis	University of California, San Francisco	70,026
OH, JANG O	Recurrent Herpes Simplex Uveitis	University of California, San Francisco	83,836
PRENDERGAST, ROBERT A	Pathogenesis of Uveitis	Johns Hopkins University	61,746
WACKER, WALDON B	Auto- and Iso-Immune Response to Ocular Tissues	University of Louisville	*
WONG, VERNON G	Experimental Ocular Histoplasmosis in Primates	Georgetown University	49,623
Total Active Grants for Area: 10			
Total Grants for Area Receiving FY 76 Funds: 9			Total Dollars for Area: 450,990
Total Active Grants for Subprogram: 82			
Total Grants for Subprogram Receiving FY 76 Funds: 69			Total Dollars for Subprogram: 4,012,193



Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
Development, Structure, and Function as Related to Disease			
H. Uveal Tract			
I. Vitreous Humor			
BALAZS, ENDRE A	Physiology and Pathology of the Vitreous	Columbia University	29,771
BALAZS, ENDRE A	Physiology and Pathology of the Vitreous	Columbia University	180,367
CHAKRABARTI, BIRESWAR	Role of Hyaluronic Acid in the Vitreous Structure	Eye Research Institute of Retina Foundation	56,518
CROSS, HAROLD E	Abnormality in Collagen Packing: Cross-Linking	University of Arizona	43,853
FOOS, ROBERT Y	Vitreoretinal Junction	University of California, Los Angeles	40,357
JACOBSON, BERNARD J	Role of Hyalocytes in the Vitreous	Boston Biomedical Research Institute	59,799
MACHEMER, ROBERT	Vitrectomy Through the Pars Plana	University of Miami	69,728
PEYMAN, GHOLAM A	Intravitreal Surgery Techniques	University of Illinois Medical Center	*
REFOJO, MIGUEL F	Synthetic Hydrophilic Polymers for Eye Surgery	Eye Research Institute of Retina Foundation	81,023
SWANN, DAVID A	Chemistry and Biology of Vitreous Structural Proteins	Massachusetts General Hospital	42,950
Total Active Grants for Area: 10			
Total Grants for Area Receiving FY 76 Funds: 9			
Total Dollars for Area:			604,366
J. Visual Cells and Pigment Epithelium			
ADAMS, CALVIN K	The Photoreceptor Mosaic in Man and Monkey	University of Florida	54,449
ALLEN, DONALD M	Physiology of Visual Pigments	University of Oregon	18,598
ALPERN, MATHEW	Psychophysiological Studies of Ocular Abnormalities	University of Michigan	100,839
ANDERSON, ROBERT E	Metabolism of Visual Cells	Baylor College of Medicine	79,755
APPLEBURY, MEREDITH L	Photoreception and Transduction in Vision	Princeton University	40,465
BASINGER, SCOTT F	Retina: Photoreceptor Membrane Synthesis and Function	Baylor College of Medicine	46,695
BECKER, RALPH S	Spectratheory and Photochemistry of Visual Pigments	University of Houston	27,318
BERG, HOWARD C	Photophysiology in a Bacterium Containing Rhodopsin	University of Colorado	43,742
BERMAN, ELAINE R	Studies on the Pigment Epithelium of the Retina	Hebrew University of Jerusalem	12,250
BLASIE, J KENT	Structure and Function of Membranes Involved in Vision	University of Pennsylvania	50,069
BOK, DEAN	Electron Microscope Autoradiography of Ocular Tissues	University of California, Los Angeles	31,944
BOWND, M DERIC	Molecular Biology of Visual Receptor Outer Segments	University of Wisconsin, Madison	58,900
BRAMMER, JIMMIE D	Vitamin A and Photoreception in Insect Visual Systems	University of Vermont and State Agricultural College	35,569
BRIDGES, C DAVID	Photochemical and Biochemical Reactions in the Visual System	New York University	98,979
BRODY, SEYMOUR S	Use of Monomolecular Films to Study Visual Processes	New York University	51,096
BROWN, HAROLD M	Transduction Mechanism of Photoreceptors	University of Utah	108,839
BROWN, JOEL E	Visual Receptor Potentials	Vanderbilt University	7,923
BROWN, JOEL E	Anatomy and Physiology of Vision	Vanderbilt University	5,546
BUNT, ANN H	Protein Transport in Retinal Photoreceptors and Axons	University of Washington	42,246

Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
COHEN, ADOLPH I	Cytology and Physiology of the Retina	Washington University	92,642
CONE, RICHARD A	Visual Excitation Role of Visual Pigment	Johns Hopkins University	46,755
CORLESS, JOSEPH M	Retinal Rod Photoreceptor Membrane Structure/Function	Duke University	70,608
CRESCITELLI, FREDERICK	Comparative Studies of the Vertebrate Retina	University of California, Los Angeles	35,944
Crouch, Rosalie K	Retinal Disease and Artificial Visual Pigments	Medical University of South Carolina	32,442
CUSANOVICH, MICHAEL A	Regeneration of the Visual Pigment Rhodopsin	University of Arizona	19,755
DRATZ, EDWARD A	Studies of the Prevention of Retinal Rod Degeneration	University of California, Santa Cruz	84,390
DRATZ, EDWARD A	Structure and Function of Visual Photoreceptors	University of California, Santa Cruz	62,565
EBREY, THOMAS G	Studies on the Mechanism of Visual Excitation	University of Illinois, Urbana	48,730
EISENBERG, MOISES	Incorporation of Rhodopsin into Artificial Membranes	State University of New York at Stony Brook	32,701
FAGER, ROGER S	Preparation and Characterization of Cone Pigments	University of Virginia	50,732
FEENEY, LYNETTE	Synthesis and Phagocytosis in Ocular Neuroepithelia	University of Oregon Health Sciences Center	33,483
FLEISCHMAN, DARRELL E	Cyclic Nucleotide Function in Photoreceptors	Charles F. Kettering Foundation Research Laboratory	30,128
FUTTERMAN, SIDNEY	Retinal Metabolism	University of Washington	45,401
GOLDSMITH, TIMOTHY H	Visual Mechanisms	Yale University	55,284
GORMAN, ANTHONY L	Ionic and Metabolic Basis of Visual Responses	Boston University	66,113
HALL, MICHAEL O	The Biosynthesis of Visual Pigment Rhodopsin	University of California, Los Angeles	71,301
HARGRAVE, PAUL A	Rhodopsin Structure and Function	Southern Illinois University	18,336
HAYES, KENNETH C	Nutritional Retinal Degeneration In Cats	Harvard University	50,536
HELLER, JORAM	Retinol Delivery to Pigment Epithelium and Neural Retina	University of California, Los Angeles	57,546
HOLLYFIELD, JOE G	Experimental Analysis of Retinal Development	Columbia University	19,858
HOLLYFIELD, JOE G	Phagocytic Activity of the Pigment Epithelium	Columbia University	38,836
HUBBELL, WAYNE L	Molecular Basis of Membrane Excitation	University of California, Berkeley	59,014
HUDSON, BRUCE S	Electronic Structure of the Visual Polyenes	Stanford University	30,640
KAPLAN, MICHAEL W	Optical Studies of Photoreceptor Function	Good Samaritan Hospital and Medical Center	62,188
KARPLUS, MARTIN	Electronic Structure of Biomolecules	Harvard University	33,284
KEAN, EDWARD L	Glycolipid and Glycoprotein Metabolism in Eye Tissue	Case Western Reserve University	89,022
KLIGER, DAVID S	Investigation of the Bleaching Stages of Rhodopsin	University of California, Santa Cruz	26,764
KOHLER, BRYAN E	Spectroscopic Studies of the Visual Pigments	Wesleyan University	78,721
KORENBROT, JUAN I	Rhodopsin and Transduction in Rod Photoreceptors	University of California, San Francisco	55,787
KROFF, ALLEN	Photochemistry of the Visual Pigments	Amherst College	17,660
LEURE-DU PREL, ALPHONSE E	Retinal Zinc: Cellular Location and Visual Function	Pennsylvania State University Hershey Medical Center	29,966
LEWIS, AARON	Tunable Laser Raman Spectroscopy of the Visual Process	Cornell University	42,533



Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
LIEBMAN, PAUL A	Microphotometric Studies on Retinal Rods and Cones	University of Pennsylvania	98,652
LITMAN, BURTON J	Role of Macromolecules in Photoreceptor Membranes	University of Virginia	31,395
LOLLEY, RICHARD N	Maturation of Metabolism in Normal and Dystrophic Retina	University of California, Los Angeles	37,526
MARMOR, MICHAEL F	Interaction Between Retina and Pigment Epithelium	Stanford University	67,376
McConnell, David G	<i>Studies of Retinal Rod Cyclic GMP Phosphodiesterase</i>	<i>Michigan State University</i>	39,252
McFARLAND, WILLIAM N	Environmental Light and Visual Pigments	Cornell University	38,017
MILLER, WILLIAM H	Structure and Function of Eyes	Yale University	57,063
MUNZ, FREDERICK W	Genetics of Visual Pigments	University of Oregon	38,097
NAKANISHI, KOJI	Structural and Conformational Studies of Visual Pigments	Columbia University	17,485
NAKANISHI, KOJI	Pigment Formation with Retinals	Columbia University	62,033
NOELL, WERNER K	Vulnerability of the Retina to Light and Other Agents	State University of New York at Buffalo	69,678
OLSON, MARK D	The Fine Structural Development of Bruch's Membrane	George Washington University	34,325
OSTROY, SANFORD E	Related Molecular and Physiological Events in Vision	Purdue University	37,087
PANNBACKER, RICHARD G	Cyclic Nucleotide Function in Retinal Photoreceptors	University of Colorado Medical Center	31,367
PAUTLER, EUGENE L	Transretinal Potential and Sugar Transport in Mammals	Colorado State University	39,386
RAVIOLA, ELIO	Freeze-Fracture Studies on the Retina	Harvard University	45,109
REID, TED W	Role of Glutamine Transferase in the Retina	Yale University	49,166
REIF-LEHRER, LIANE	Biochemical Control in the Normal and Diseased Retina	Harvard University	105,898
ROBB, RICHARD M	Histochemistry of Phosphodiesterase in the Retina	Children's Hospital Medical Center, Boston	56,913
ROCKEY, JOHN H	Primary Structural Studies of Visual Pigments	Presbyterian-University of Pennsylvania Medical Center	55,435
SAARI, JOHN C	Biochemistry of the Retina and Pigment Epithelium	University of Washington	44,270
SCHMIDT, SUSAN Y	Biochemical Studies of Retina and Pigment Epithelium	Harvard University	84,704
SLOAN, SHERWIN H	Cyclic Nucleotide Metabolism in the Human Retina	University of California, Los Angeles	10,065
SREBRO, RICHARD	Molecular Basis of Photoreceptor Activity	State University of New York at Buffalo	70,863
STANLEY, H EUGENE	Normal and Abnormal Mechanisms of Vision	Massachusetts Institute of Technology	37,479
STEINBERG, ROY H	Pigment Epithelial Ion Transport and Retinal Function	University of California, San Francisco	78,863
STRYER, LUBERT	Conformational Aspects of Visual Excitation	Yale University	56,073
WAGGONER, ALAN S	Visual Excitation — Early Molecular Events	Amherst College	24,853
WALD, GEORGE	Chemistry and Physiology of Visual Excitation	Harvard University	78,489
WARSHEL, ARIEH	Theoretical Studies of the Vision Process	University of California, Los Angeles	25,031
WINKLER, BARRY S	Photoreceptor Electrogenesis: Dynamics and Controls	Oakland University	51,473
WOOTEN, BILLY R	Retinal Mosaicism in Females Carrying Color Blindness	Brown University	26,487
WRIGHT, ALLEN K	Size and Shape Determination of Rhodopsin in Solution	University of Tennessee Center for the Health Sciences	54,006

Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
WRIGHT, ANTHONY A	Hue Discrimination Studies	University of Texas Health Science Center	26,385
YGUERABIDE, JUAN	Conformational Dynamics of Excitable Membranes	University of California, San Diego	
YOUNG, RICHARD W	Histophysical and Histochemical Studies on the Eye	University of California, Los Angeles	91,465
YU, HYUK	Membrane Fluidity and Photoreceptor Function	University of Wisconsin, Madison	42,931
ZIMMERMAN, WILLIAM F	Biochemistry of Visual Cell Renewal and Visual Cycles	Amherst College	25,952
Total Active Grants for Area: 90			
Total Grants for Area Receiving FY 76 Funds: 87			
			Total Dollars for Area: 4,273,842

**K. Retinal Organization and Visual Adaption**

ABRAMOV, ISRAEL	Spectral Properties of Cells in the Goldfish Retina	Brooklyn College	33,478
ARNETT, DAVID W	Interactions Between Mammalian Retinal Ganglion Cells	Pennsylvania State University	10,088
BAKER, HOWARD D	Very Early Dark Adaptation From Intense Bleaches	Florida State University	31,209
BARON, WILLIAM S	Photoreceptor Information Processing in Primates	Stanford Research Institute	121,821
BAYLOR, DENIS A	Neural Signalling in the Retina	Stanford University	27,738
BROWN, JOEL E	Visual Receptor Potentials	State University of New York at Stony Brook	46,171
BROWN, JOEL E	Anatomy and Physiology of Vision	State University of New York at Stony Brook	39,956
BROWN, KENNETH T	Neurophysiology of the Vertebrate Retina	University of California, San Francisco	157,501
BURKHARDT, DWIGHT A	Vision and Intraretinal Potentials	University of Minnesota	24,067
CHAPPELL, RICHARD L	Neural Interactions of the Retina	Hunter College	50,652
DE VOE, ROBERT D	Analysis of Flicker Retinal Action Potentials	Johns Hopkins University	79,672
DOWLING, JOHN E	Functional Organization of Vertebrate Visual Systems	Harvard University	66,506
DOWLING, JOHN E	Anatomical Organization of the Visual System	Harvard University	48,117
EASTER, STEPHEN S, JR	Visual Mechanisms in Lower Vertebrates	University of Michigan	20,390
ENOCH, JAY M	The Etiology of Reduced Visual Function	University of Florida	126,131
FEIN, ALAN	Mechanisms of Vision	Marine Biological Laboratory	44,016
FENDER, DEREK H	Nonlinear Identification of Retinal Biopotentials	California Institute of Technology	43,773
FISHER, LESLIE J	Developmental Analysis of Retinal Synaptic Organization	University of Michigan	21,458
GREEN, DANIEL G	Functional Organization of the Retina	University of Michigan	52,720
HINDS, JAMES W	Serial Section Analysis of Developing Mouse Retina	Boston University	29,169
Hood, Donald C	<i>Physiological Adjustment to Ambient Light Levels</i>	<i>Columbia University</i>	25,296
INGLING, CARL R, JR	Interaction Between Receptor Classes in the Retina	Ohio State University	17,190
KEEFE, J RICHARD	Cytology of Retinal Differentiation	University of Louisville	55,567
KNIGHT, BRUCE W, JR	Mathematical Analyses of Neural Networks	Rockefeller University	57,244
KNIGHTON, ROBERT W	Electrical Stimulation of the Vertebrate Retina	University of Miami	32,026
KRAMER, STEVEN G	Retinal Dopamine and ERG Flicker Suppression	University of California, San Francisco	*
LAM, DOMINIC M	Neurotransmitters in the Visual System	Harvard University	44,349

Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
LISMAN, JOHN E	Adaptation in Invertebrate Photoreceptors	Brandeis University	41,137
MACLEOD, DONALD I	Retinal Mechanisms in Human Vision	University of California, San Diego	49,883
MASLAND, RICHARD H	Neurotransmission in Mammalian Retina	Massachusetts General Hospital	41,083
McREYNOLDS, JOHN S	Functional Organization of the Vertebrate Retina	University of Michigan	45,689
MILLER, ROBERT F	Glial Contributions to Retinal Function	State University of New York at Buffalo	29,244
NAKA, KEN-ICHI	Function of Neuron Networks in Vertebrate Visual Systems	University of Texas Medical Branch, Galveston	100,936
NEWMAN, NANCY M	Evaluation of the Retinal Nerve Fiber Layer	University of the Pacific	63,148
NOLTE, JOHN F	Photoreceptor Interactions	University of Colorado Medical Center	*
O'BRYAN, PAUL M, JR	Early Receptor Potentials in Single Vertebrate Cones	Boston University	58,483
OGDEN, THOMAS E	Non-Linear Analysis of Retinal Potentials	Estelle Doheny Eye Foundation	48,374
OGDEN, THOMAS E	A Study of Structure and Function of Retinal Neurones	Estelle Doheny Eye Foundation	50,178
PAK, WILLIAM L	Sensory excitation and Information Flow in the Retina	Purdue University	81,128
PINTER, ROBERT B	Quantitative Determination of Retinal Function	University of Washington	24,018
PINTO, LAWRENCE H	Ionic Mechanisms for Retinal Neuron Potentials	Purdue University	29,900
PROENZA, LUIS M	Electrophysiology of Retinal Cells in Vision	University of Georgia	25,550
PURPLE, RICHARD L	Studies on Integrative Mechanisms of Neurons	University of Minnesota	31,586
RATLIFF, FLOYD	Electrical Activity, Single Receptors, Neurons of Eye	Rockefeller University	78,389
REDBURN, DIANNA A	Identification of Transmitter Agents in Retina	University of Texas Health Science Center	54,826
RIPPS, HARRIS	Visual Adaptation in the Vertebrate Retina	New York University	126,688
STELL, WILLIAM K	Pathways for Color Vision in Retinas	University of California, Los Angeles	118,574
STURR, JOSEPH F	Mechanisms of Visual Sensitivity	Syracuse University	83,184
TOMITA, TSUNEO	Electric Sign of Single Photoreceptors	Keio University	*
WERBLIN, FRANK S	Membrane Mechanisms for Cell Function in Retina	University of California, Berkeley	60,912
WITKOVSKY, PAUL	The Origin and Ionic Basis of the Electroretinogram	State University of New York at Stony Brook	89,810
WULFF, VERNER J	A Study of Visual Coupling Reactions	Masonic Foundation, Medical Research and Human Welfare Laboratories	44,190
YAZULLA, STEPHEN	Spatio-Chromatic Coding in Retinal Neurons	State University of New York at Stony Brook	35,301
Total Active Grants for Area: 53			
Total Grants for Area Receiving FY 76 Funds: 49		Total Dollars for Area:	2,711,375
Total Active Grants for Subprogram: 153			
Total Grants for Subprogram Receiving FY 76 Funds: 145		Total Dollars for Subprogram:	7,599,583

L. Special Areas of Future Interest

1. Toxic and Environmental Disorders

GEERAETS, RAGNIT	Teratogenic Induction of Coloboma	Virginia Commonwealth University	10,242
HOPE, GEORGE M	Cold Limits on Photoreceptor Viability and Function	University of Louisville	20,146

Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
POTTS, ALBERT M	Pathophysiological Studies on Optic Nerve	University of Louisville	*
POTTS, ALBERT M	The Action of Drugs and Poisons on the Eye	University of Louisville	85,129
WELCH, ASHLEY J	Ocular Damage Due to Retinal Temperature Rise	University of Texas, Austin	43,733
Total Active Grants for Area: 5			
Total Grants for Area Receiving FY 76 Funds: 4			Total Dollars for Area: 159,250

## 2. Low Vision

## 3. Retinal Regeneration and Transplantation

GILLARY, HOWARD L	Visual Mechanisms in a Regenerating Gastropod Retina	University of Hawaii at Manoa	24,815
Total Active Grants for Area: 1			
Total Grants for Area Receiving FY 76 Funds: 1			Total Dollars for Area: 24,815

## 4. Tissue Acquisition and Distribution: Human Donor Eyes and Animal Models

Total Active Grants for Subprogram: 6			
Total Grants for Subprogram Receiving FY 76 Funds: 5			Total Dollars for Subprogram: 184,065
Total Active Grants for Program: 241			
Total Grants for Program Receiving FY 76 Funds: 219			Total Dollars for Program: 11,785,841 +

\*Prior year funding

+23 grants received an additional \$265,417 in supplemental awards

Principal Investigator Title of Project Institution Department City and State	Grant Number	Entry Number	Current Budget Period Project Period	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
NATIONAL EYE INSTITUTE SPECIALIZED CLINICAL RESEARCH CENTER GRANTS ACTIVE FY 1976							
HOLLAND, MONTE G Clinical Electrophysiologic Studies of Ocular Disease Tulane University Ophthalmology New Orleans, Louisiana	5 P50 EY00494-06	242	01/01/75-12/31/76 01/01/73-12/31/76	*			137,608
NEWELL, FRANK W Retinal and Choroidal Disease Center University of Chicago Ophthalmology Chicago, Illinois	2 P50 EY00523-15	243	01/15/76-12/31/76 01/15/76-12/31/76	74,845	36,872	111,717	74,845
NORTON, EDWARD W A Study of Macular Disease University of Miami Ophthalmology Miami, Florida	2 P50 EY00338-11	244	06/01/76-05/31/77 06/01/76-05/31/79	68,994	26,823	95,817	254,874
Total Grants for Program Receiving FY 1976 Funds: 2			Total Dollars for Program:	143,839	63,695	207,534	329,719



Principal Investigator Title of Project Institution Department City and State	Contract Number	Entry Number	Current Budget Period Project Period	FY 1976 Total Awarded	Accumu- lative Awarded to Date
<b>NATIONAL EYE INSTITUTE RESEARCH CONTRACTS ACTIVE FY 1976</b>					
ARMALY, MANSOUR F Photographic Technique for Fluorescein Angiography George Washington University Ophthalmology Washington, District of Columbia	1 N01 EY32131-00	245	06/18/73-06/30/76 06/18/73-06/30/76	*	85,591
BROWN, DUANE C Development of a Photogrammetric Fundus Camera DBA Systems, Inc. Melbourne, Florida	1 N01 EY52156-00	246	06/30/75-08/31/76 06/30/75-02/28/77	*	125,517
CAHILL, JOHN Prevalence and Cost of Visual Disorders and Disabilities Westat Research, Inc. Rockville, Maryland	1 N01 EY52108-00	247	11/04/74-03/01/76 11/04/74-03/01/76	*	68,489
GIBSON, HAROLD R Maintain a Visual Science Information Center University of the Pacific Visual Sciences San Francisco, California	1 N01 EY62148-00	248	06/30/76-06/29/77 06/30/76-08/29/77	74,444	74,444
LAVAIL, MATTHEW M Hereditary Degenerative Disease of the Retina—Rat Model University of California, San Francisco Anatomy San Francisco, California	1 N01 EY62147-00	249	06/30/76-06/29/77 06/30/76-06/29/78	55,482	55,482
LEIBOWITZ, HAROLD Framingham Ophthalmic Study Boston University Surgery Boston, Massachusetts	1 N01 EY22112-00	250	06/30/72-12/31/77 06/30/72-12/31/77	*	643,042
PATZ, ARNALL Evaluation of Retinal Choroidal Circulation Johns Hopkins University Ophthalmology Baltimore, Maryland	1 N01 EY32139-00	251	06/30/73-06/29/76 06/30/73-06/29/76	*	413,507
SIDMAN, RICHARD L Development of a Rat-Breeding Colony Children's Hospital Medical Center Boston, Massachusetts	1 N01 EY32133-00	252	06/30/73-06/29/76 06/30/73-06/29/76	*	235,639
<b>Diabetic Retinopathy Vitrectomy Study</b>					
AABERG, THOMAS M Medical College of Wisconsin Milwaukee, Wisconsin	1 N01 EY52143-00	253	06/26/75-06/25/77 06/26/75-06/25/78	*	44,083
BARTSCH, GLENN University of Minnesota (Coordinating Center) Minneapolis, Minnesota	1 N01 EY52147-00	254	06/26/75-06/25/77 06/26/75-06/25/78	*	283,125
CHENOWETH, R G Good Samaritan Hospital and Medical Center Portland, Oregon	1 N01 EY62141-00	255	06/28/76-06/27/77 06/28/76-06/27/78	43,728	43,728
DAVIS, MATTHEW D University of Wisconsin, Madison (Fundus Photograph Reading Center) Ophthalmology Madison, Wisconsin	1 N01 EY52148-00	256	06/26/75-06/25/77 06/26/75-06/25/78	*	159,541
FEDERMAN, JAY Wills Eye Hospital Philadelphia, Pennsylvania	1 N01 EY62144-00	257	06/28/76-06/27/77 06/28/76-06/27/78	35,651	35,651

Principal Investigator Title of Project Institution Department City and State	Contract Number	Entry Number	Current Budget Period Project Period	FY 1976 Total Awarded	Accumulative Awarded to Date
FEMAN, STEPHEN S Albany Medical College Albany, New York	1 N01 EY52146-00 Ophthalmology	258	06/26/75-06/25/77 06/26/75-06/25/78	*	66,279
IRVINE, ALEXANDER R University of California, San Francisco San Francisco, California	1 N01 EY62139-00 Ophthalmology	259	06/28/76-06/27/77 06/28/76-06/27/78	59,319	59,319
KARLIN, DAVID Cornell University Medical Center New York, New York	1 N01 EY62140-00 Ophthalmology	260	06/28/76-06/27/77 06/28/76-06/27/78	44,399	44,399
MACHEMER, ROBERT University of Miami Miami, Florida	1 N01 EY52142-00 Ophthalmology	261	06/26/75-06/25/77 06/26/75-06/25/78	*	103,107
MARGHERIO, R R Wayne State University Detroit, Michigan	1 N01 EY62143-00 Ophthalmology	262	06/28/76-06/27/77 06/28/76-06/27/78	46,006	46,006
MCMEEL, J WALLACE Massachusetts Eye and Ear Infirmary Boston, Massachusetts	1 N01 EY52144-00	263	06/26/75-06/25/77 06/26/75-06/25/78	*	65,803
MICHELS, RONALD G Johns Hopkins University Baltimore, Maryland	1 N01 EY52145-00 Ophthalmology	264	06/26/75-06/25/77 06/26/75-06/25/78	*	117,209
MYERS, FRANK L University of Wisconsin, Madison Madison, Wisconsin	1 N01 EY52140-00 Ophthalmology	265	06/26/75-06/25/77 06/26/75-06/25/78	*	92,570
PEYMAN, GHOLAM A University of Illinois Medical Center Chicago, Illinois	1 N01 EY62142-00 Ophthalmology	266	06/28/76-06/27/77 06/28/76-06/27/78	57,981	57,981
RYAN, STEPHEN J University of Southern California Los Angeles, California	1 N01 EY52141-00 Radiology	267	06/26/75-06/25/77 06/26/75-06/25/78	*	66,096
<b>Diabetic Retinopathy (Photocoagulation) Study</b>					
BERROCAL, JOSE University of Puerto Rico Medical Science Campus Ophthalmology San Juan, Puerto Rico	5 N01 EY42142-04	268	06/01/76-09/30/77 09/01/73-05/31/78	82,377	243,131
BRADLEY, ROBERT F Joslin Diabetes Foundation Boston, Massachusetts	5 N01 EY42170-02	269	06/01/76-09/30/77 06/01/74-05/31/78	117,089	259,095
DAVIS, MATTHEW D University of Wisconsin, Madison (Fundus Photograph Reading Center) Madison, Wisconsin	5 N01 EY32130-05 Ophthalmology	270	06/01/76-05/31/77 06/01/73-05/31/78	215,378	702,829
GOLDBERG, MORTON F University of Illinois Medical Center Ophthalmology Chicago, Illinois	5 N01 EY32125-03	271	06/01/76-09/30/77 06/01/73-05/31/78	101,696	416,552
HARRIS, JOHN E University of Minnesota Minneapolis, Minnesota	5 N01 EY32126-05 Ophthalmology	272	06/01/76-05/31/77 06/01/73-05/31/78	130,703	398,545

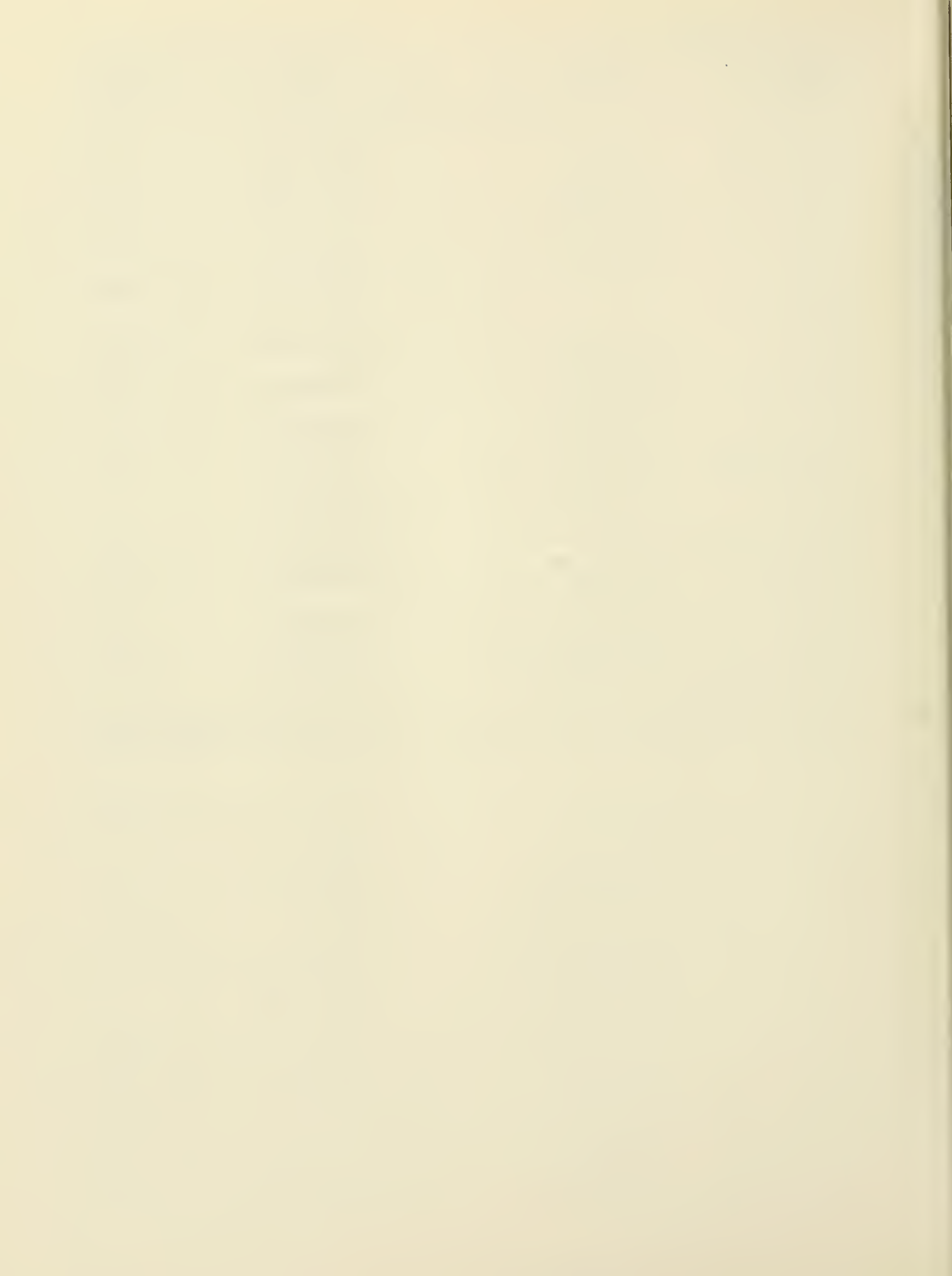


Principal Investigator Title of Project Institution Department City and State	Contract Number	Entry Number	Current Budget Period Project Period	FY 1976 Total Awarded	Accumulative Awarded to Date
HARRIS, JOHN E University of Minnesota Minneapolis, Minnesota	1 N01 EY32126-00 Ophthalmology	273	06/01/73-05/31/78 06/01/73-05/31/78	*	83,959
KNATTERUD, GENELL L University of Maryland at Baltimore (Coordinating Center) Social and Preventive Medicine Baltimore, Maryland	5 N01 EY32129-04	274	06/30/75-12/01/76 06/01/73-05/31/78	100,000	669,021
MARGHERIO, RAYMOND R Wayne State University Detroit, Michigan	5 N01 EY42171-02 Ophthalmology	275	06/01/76-05/31/77 06/01/74-05/31/78	54,903	158,245
MCLEAN, EDWARD B University of Washington Seattle, Washington	5 N01 EY42128-04 Ophthalmology	276	06/01/76-09/30/77 08/01/73-05/31/78	82,055	258,609
MCMEEL, J WALLACE Massachusetts Eye and Ear Infirmary Boston, Massachusetts	5 N01 EY42172-02	277	06/01/76-05/31/77 06/01/74-05/31/78	60,482	180,809
MYERS, FRANK L University of Wisconsin, Madison Madison, Wisconsin	5 N01 EY32121-03 Ophthalmology	278	06/01/76-05/31/78 06/01/73-05/31/78	149,940	405,005
NORTON, EDWARD W University of Miami Miami, Florida	5 N01 EY32118-04 Ophthalmology	279	06/01/76-09/30/77 06/01/73-05/31/78	63,895	251,563
PATZ, ARNALL Johns Hopkins University Baltimore, Maryland	5 N01 EY32127-04 Ophthalmology	280	06/01/76-05/31/77 06/01/73-05/31/78	164,858	414,770
RIEKHOF, F TEMPLE University of Utah Salt Lake City, Utah	5 N01 EY32122-04 Surgery	281	06/01/76-09/30/77 06/01/73-05/31/78	110,605	329,432
STRAATSMA, BRADLEY R University of California, Los Angeles Ophthalmology Los Angeles, California	5 N01 EY42173-02	282	06/01/76-09/30/77 06/01/74-05/31/78	95,617	219,972
TASMAN, WILLIAM S Wills Eye Hospital Philadelphia, Pennsylvania	5 N01 EY32119-04	283	06/01/76-09/30/77 06/01/73-05/31/78	55,437	178,504
VAN HEUVEN, WICHARD A Albany Medical College Albany, New York	5 N01 EY32124-04 Ophthalmology	284	06/30/76-09/30/77 06/01/73-05/31/78	116,311	335,691
WATZKE, ROBERT C University of Iowa Iowa City, Iowa	5 N01 EY32123-04 Ophthalmology	285	06/01/76-09/30/77 06/01/73-05/31/78	120,457	299,922
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Total Active Contracts for Program: 41					
Total Contracts for Program Receiving FY 1976 Funding: 25			Total Dollars for Program:	2,238,813	8,792,262

\* Prior year funding

Principal Investigator Title of Project	Project Number	Entry Number	Current Budget Period Project Period	FY 1976 Funding
NATIONAL EYE INSTITUTE INTRAMURAL RESEARCH PROJECTS ACTIVE FY 1976				
BERGSMAN, DONALD R Studies of Choroidal-Retinal Degenerative Diseases	Z01 EY00038-04CB	286	07/01/75-09/30/76 07/01/75-06/30/76	9,060
BUZNEY, SHELDON In Vitro Studies of Retinal Capillaries	Z01 EY00010-02 CB	287	07/01/75-09/30/76 07/01/75-06/30/76	51,359
CHADER, GERALD J Cyclic Nucleotides and Vision	Z01 EY00148-03 LVR	288	07/01/75-09/30/76 07/01/75-06/30/76	74,109
CHADER, GERALD J Development and Function of Retina, Pigment Epithelium and Cornea	Z01 EY00134-03 LVR	289	07/01/75-09/30/76 07/01/75-06/30/76	60,180
CHRISTIANSEN, JOHN M The Pathogenesis of Abnormal Vascular Proliferations in the Vitreous	Z01 EY00170-01 CB	290	07/01/75-09/30/76 07/01/75-06/30/76	36,809
FAMIGLIETTI, EDWARD V, JR. Anatomy of Mammalian Retina	Z01 EY00025-04 LVR	291	07/01/75-09/30/76 07/01/75-06/30/76	15,937
FERRIS, FREDERICK L, III Development of a Standardized Visual Acuity Measuring Device	Z01 EY00029-02 OBE	292	07/01/75-09/30/76 07/01/75-06/30/75	205
FERRIS, FREDERICK L, III Development of a Visual Acuity Examination Technique to Evaluate Patient Bias	Z01 EY00040-02 OBE	293	07/01/75-09/30/76 07/01/75-06/30/76	240
FISHMAN, MARTIN L Ultrastructural Demonstration of Calcium in Retina and Pigment Epithelium	Z01 EY00169-01 CB	294	07/01/75-09/30/76 07/01/75-06/30/76	18,404
FRANK, ROBERT N Biochemistry of Vertebrate Retinal Receptor Outer Segments	Z01 EY00141-03 CB	295	07/01/75-09/30/76 07/01/75-06/30/76	16,451
FRANK, ROBERT N Studies of Retinal and Choroidal Vascular Diseases	Z01 EY00140-03 CB	296	07/01/75-09/30/76 07/01/75-06/30/76	9,775
GAASTERLAND, DOUGLAS Radioiodinated Chloroquine Analog for Diagnosis of Ocular Melanoma	Z01 EY00143-03 CB	297	07/01/75-09/30/76 07/01/75-06/30/76	12,985
GOLDMAN, ARNOLD I Ultrastructural and Biochemical Correlates in the Vertebrate Retina	Z01 EY00179-01 LVR	298	07/01/75-09/30/76 07/01/75-06/30/76	44,917
GUNKEL, RALPH D Research in Methods of Evaluating Visual Processes	Z01 EY00006-05 CB	299	07/01/75-09/30/76 07/01/75-06/30/76	77,259
HELMSEN, RALPH J Induction of Buphthalmos in Chicks by Feeding a High Level of Glycine	Z01 EY00027-05 LVR	300	07/01/75-09/30/76 07/01/75-06/30/76	13,053
HESS, HELEN H Biochemical Structure of Retina and Pigment Epithelium in Health and Disease	Z01 EY00135-04 LVR	301	07/01/75-09/30/76 07/01/75-06/30/76	100,321
HILLER, RITA Prognosis for Life in Diabetics: Relation to Severity of Retinopathy	Z01 EY00037-03 OBE	302	07/01/75-09/30/76 07/01/75-06/30/76	2,414
KAISER-KUPFER, MURIEL Ophthalmologic Screening for Metastatic Lesions to the Eye	Z01 EY00018-02 CB	303	07/01/75-09/30/76 07/01/75-06/30/76	9,729
KOLLARITS, CAROL R Applications of Surgical Vitrectomy	Z01 EY00014-02 CB	304	07/01/75-09/30/76 07/01/75-06/30/76	4,324
KOLLARITS, CAROL R The Urokinase Central Retinal Vein Occlusion Trial	Z01 EY00022-02 CB	305	07/01/75-09/30/76 07/01/75-06/30/76	11,975

Principal Investigator Title of Project	Project Number	Entry Number	Current Budget Period Project Period	FY 1976 Funding
KUWABARA, TOICHIRO Light Effect on the Retina	Z02 EY00131-04 LVR	306	07/01/75-09/30/76 07/01/75-06/30/76	72,745
KUWABARA, TOICHIRO Anatomical and Pathological Studies of Ocular Tissues	Z01 EY00129-04 LVR	307	07/01/75-09/30/76 07/01/75-06/30/76	86,399
KUWABARA, TOICHIRO Effect of Laser on the Retina	Z01 EY00130-04 LVR	308	07/01/75-09/30/76 07/01/75-06/30/76	32,295
LEWIS, MARC S Chemistry of Rhodopsin	Z01 EY00008-05 LVR	309	07/01/75-09/30/76 07/01/75-06/30/76	25,905
NELSON, RALPH Electrophysiological Studies of Mammalian Retina	Z01 EY00005-04 LVR	310	07/01/75-09/30/76 07/01/75-06/30/76	26,237
O'BRIEN, PAUL J Synthesis of Sugar-Containing Polymers in Retina	Z01 EY00015-11 LVR	311	07/01/75-09/30/76 07/01/75-06/30/76	28,246
O'BRIEN, PAUL J Protein Synthesis in the Retina	Z01 EY00016-09 LVR	312	07/01/75-09/30/76 07/01/75-06/30/76	19,917
ROBINSON, W GERALD, JR. Ultrastructure and Function of the Pigment Cells of the Eye	Z01 EY00149-03 LVR	313	07/01/75-09/30/76 07/01/75-06/30/76	47,879
SHICHI, HITOSHI The Molecular Pharmacology of the Eye	Z01 EY00007-02 LVR	314	07/01/75-09/30/76 07/01/75-06/30/76	50,058
SHICHI, HITOSHI The Membrane Biology of the Visual Process	Z01 EY00004-02 LVR	315	07/01/75-09/30/76 07/01/75-06/30/76	17,917
YOSHIKAMI, SHUKO The Visual Cell-Process of Photoexcitation	Z01 EY00138-04 LVR	316	07/01/75-09/30/76 07/01/75-06/30/76	34,981
YUEN, KAREN On the Association of Female Hormones with Blindness from Diabetic Retinopathy	Z01 EY00166-01-OBE	317	07/01/75-09/30/76 07/01/75-06/30/76	5,026
Total Projects for Program: 32			Total Dollars for Program: 1,017,111	



## II. Corneal Diseases

## Subprograms

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### II. CORNEAL DISEASES

- A. External Ocular Infections and Inflammatory Diseases
- B. Dry Eyes, and Tear Abnormalities, Epithelial Disorders, and Drug Delivery
- C. Refractive Problems and Contact Lenses
- D. Corneal Edema, Dystrophies, and Inherited Disorders
- E. Corneal Transplantation and Stromal Injury and Repair
- F. Tumors and Other Lid, Conjunctival, and Orbital Problems



## II. Corneal Diseases

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
NATIONAL EYE INSTITUTE RESEARCH PROJECT GRANTS ACTIVE FY 1976 — ALPHABETICAL LISTING							
ALLANSMITH, MATHEA R Studies in Ocular Immunology Eye Research Institute of Retina Foundation Ophthalmology Boston, Massachusetts Etiology	5 R01 EY01552-02	318	11/01/75-11/30/77 11/01/74-11/30/77 A	64,407	33,033	97,440	186,287
ANDERSON, ETHEL I Intermediary Metabolism of the Cornea Columbia University Ophthalmology New York, New York Etiology	5 R01 EY00699-05	319	05/01/75-12/31/76 05/01/71-12/31/76 E	*			177,327
ANDERSON, ETHEL I Intermediary Metabolism of the Cornea Columbia University Ophthalmology New York, New York Etiology	2 R01 EY00699-06	320	06/04/76-05/31/77 06/04/76-05/31/79 E	47,422	11,415	58,837	146,072
ANDREWS, JOHN S Corneal Metabolism Vanderbilt University Ophthalmology Nashville, Tennessee Etiology	5 R01 EY00048-05	321	06/01/74-12/31/76 06/01/70-12/31/76 A	*			30,407
BARON, SAMUEL Acute Hemorrhagic Conjunctivitis and Interferon University of Texas Medical Branch, Galveston Microbiology Galveston, Texas Etiology Treatment	1 R01 EY01715-01	322	04/01/76-03/31/77 04/01/76-03/31/79 A	38,588	16,520	55,108	124,228
BARR, RONALD E Oxygen Consumption and Diffusion in Rabbit Cornea University of Missouri, Columbia Ophthalmology Columbia, Missouri Etiology	1 R01 EY01604-01	323	04/01/76-03/31/77 04/01/76-03/31/79 D	44,704	13,912	58,616	116,282
BAUM, JULES L Ocular Penetration of Antibiotics in a Model New England Medical Center Hospital Ophthalmology Boston, Massachusetts Etiology Treatment	5 R01 EY01517-02	324	06/01/76-05/31/77 06/01/75-05/31/78 B	56,051	11,939	67,990	171,292
BAUM, JULES L Biochemistry of Normal and Dystrophic Corneas in Culture New England Medical Center Hospital Ophthalmology Boston, Massachusetts Etiology	1 R01 EY01793-01	325	06/01/76-05/31/77 06/01/76-05/31/79 D	97,847	12,913	110,760	243,042
BAUM, JULES L Histochemistry of Corneal Disease in Tissue Culture New England Medical Center Hospital Ophthalmology Boston, Massachusetts Etiology Diagnosis	5 R01 EY00772-05	326	09/01/75-08/31/76 09/01/71-08/31/76 D	43,607	12,715	56,322	158,369

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs
							Recom- mended For Project Period
BERMAN, MICHAEL B Regulation of Collagenase Activity in Ulceration Eye Research Institute of Retina Foundation Cornea Research Boston, Massachusetts Etiology	2 R01 EY01246-03	327	03/01/76-01/31/77 03/01/76-01/31/79 D	39,867	17,803	57,670	147,821
BLOUGH, HERBERT A Surface Chemistry of the Cornea Presbyterian-University of Pennsylvania Medical Center Ophthalmology Philadelphia, Pennsylvania Etiology	5 R01 EY01067-03	328	01/01/75-03/31/77 01/01/73-03/31/77 B	*			106,114
BOTELHO, STELLA Y Lacrimal Gland: Factors Influencing Secretion University of Pennsylvania Philadelphia, Pennsylvania Physiology Etiology	5 R01 EY00119-06	329	06/01/76-05/31/77 06/01/74-05/31/78 B	34,350	15,629	49,979	105,941
BRIGHTBILL, FREDERICK S Corneal Preservation and Keratoplasty in Monkeys University of Wisconsin, Madison Madison, Wisconsin Ophthalmology Etiology	5 R23 EY01486-02	330	06/01/76-05/31/77 06/01/75-05/31/77 E	7,500	1,828	9,328	18,662
BROWN, STUART I Precorneal Tear Film Eye and Ear Hospital of Pittsburgh Pittsburgh, Pennsylvania Ophthalmology Etiology	2 R01 EY01489-02	331	06/30/76-06/29/77 06/30/76-06/29/80 B	47,630	12,299	59,929	143,416
BROWN, STUART I Collagenolytic Systems in Normal and Diseased Corneas Eye and Ear Hospital of Pittsburgh Pittsburgh, Pennsylvania Ophthalmology Etiology	5 R01 EY01490-03	332	05/01/76-04/30/77 05/01/74-04/30/78 D	27,664	13,449	41,113	119,455
BURNS, ROBERT P Biochemical Cytology of Metabolic Eye Diseases University of Oregon Health Sciences Center Ophthalmology Portland, Oregon Etiology	5 R01 EY00753-03	333	06/01/75-08/31/76 06/01/73-08/31/76 E	*			130,952
CALKINS, JOSEPH L Holographic Stress-Testing of the Surgical Cornea Johns Hopkins University Baltimore, Maryland Ophthalmology Diagnosis	2 R01 EY01312-02	334	06/01/76-04/30/77 06/01/76-04/30/78 E	54,997	34,718	89,715	109,084
CAVANAGH, H DWIGHT Biochemical Control of Growth in Corneal Epithelium Emory University Atlanta, Georgia Ophthalmology Etiology	1 R01 EY01920-01	335	06/30/76-06/29/77 06/30/76-06/29/79 B	63,750	28,210	91,960	197,242
CHANDLER, JOHN W, JR Immunopathology and Therapy of Corneal Disease University of Washington Seattle, Washington Ophthalmology Etiology Treatment	5 R01 EY01282-03	336	06/01/76-05/31/77 06/15/74-05/31/77 E	27,784	7,220	35,004	89,329
CINTRON, CHARLES Corneal Macromolecules and Scar Formation Eye Research Institute of Retina Foundation Cornea Research Boston, Massachusetts Etiology	5 R01 EY01199-03	337	02/01/76-01/31/77 02/01/74-01/31/77 E	27,952	14,908	42,860	87,142

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	Direct Costs			Direct Costs Recom- mended For Project Period
				FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	
CINTRON, CHARLES Ultrastructure of Corneal Scar Tissue Eye Research Institute of Retina Foundation Boston, Massachusetts Etiology	1 R01 EY01524-01	338	06/01/75-08/31/76 06/01/75-08/31/76 E	*			14,130
COLES, WILLIAM H Toxic and Traumatic Effects on Corneal Endothelium Medical University of South Carolina Ophthalmology Charleston, South Carolina Etiology	5 R01 EY01439-02	339	06/30/76-06/29/77 06/30/75-06/29/78 D	21,508	6,063	27,571	91,413
CONRAD, GARY W Fibroblast Differentiation During Eye Development Kansas State University Division of Biology Manhattan, Kansas Etiology	5 R01 EY00952-05	340	02/01/76-01/31/77 02/01/75-01/31/78 D	26,621	8,726	35,347	92,786
COOPERSTEIN, DEBORRA F Ascorbic Acid Effects on Corneal Transport Adelphi University Biology Garden City, New York Etiology	5 R23 EY01485-02	341	09/01/75-08/31/76 09/01/74-08/31/77 D	4,350	0	4,350	16,600
DAVIS, STARKEY D Experimental Pseudomonas Keratitis Medical College of Wisconsin Pediatrics Milwaukee, Wisconsin Etiology Diagnosis Treatment	5 R01 EY01665-02	342	04/01/76-03/31/77 04/15/75-03/31/78 A	28,563	4,919	33,482	88,399
DAWSON, CHANDLER R Pathogenesis and Early Diagnosis of Eye Inflammations University of California, San Francisco Proctor Foundation for Research in Ophthalmology San Francisco, California Etiology Diagnosis Treatment	5 R01 EY01198-03	343	05/01/76-04/30/77 05/01/74-04/30/77 A	37,287	12,871	50,158	105,354
DAWSON, CHANDLER R Analysis of Problems in Ocular Inflammatory Diseases University of California, San Francisco Proctor Foundation for Research in Ophthalmology San Francisco, California Treatment	2 R01 EY00427-07	344	03/01/76-11/30/76 03/01/76-11/30/80 A	86,233	29,321	115,554	443,603
DIKSTEIN, SHABTAY Survival of the Corneal Endothelium Hebrew University of Jerusalem Applied Pharmacology Jerusalem, Israel Etiology	5 R01 EY00965-02	345	03/01/76-08/31/77 03/01/75-08/31/77 D	25,643	0	25,643	49,673
DONN, ANTHONY Physiological Studies of the Living Cornea in Vitro Columbia University Ophthalmology New York, New York Etiology	5 R01 EY00210-16	346	05/01/76-04/30/77 05/01/74-04/30/77 E	39,349	12,114	51,463	112,024
DOUGHMAN, DONALD J Organ Culture of Corneas University of Minnesota Ophthalmology Minneapolis, Minnesota Etiology	5 R01 EY01211-03	347	09/01/75-02/28/77 09/01/73-11/30/76 E	33,173	11,398	44,571	106,892

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
DYBBS, ALEXANDER Improvement of Corneal Contact Lens Design Case Western Reserve University Fluid, Thermal and Aerospace Sciences Cleveland, Ohio Diagnosis	1 R01 EY01528-01A1	348	06/01/76-05/31/77 06/01/76-05/31/78 B	43,118	17,534	60,652	88,237
EDELHAUSER, HENRY F Pathogenesis of Corneal Edema After Intraocular Surgery Medical College of Wisconsin Milwaukee, Wisconsin Etiology	2 R01 EY00933-04	349	05/01/76-04/30/77 05/01/76-04/30/79 D	36,800	7,668	44,468	105,807
EDWARDS, JOHN E Candida Albicans Hematogenous Endophthalmitis Los Angeles County Harbor General Hospital Torrance, California Etiology Treatment	2 R01 EY01066-04	350	05/01/76-04/30/77 05/01/76-04/30/79 A	40,060	10,428	50,488	140,603
ELLIOTT, JAMES H Studies of Ocular Hypersensitivity Vanderbilt University Nashville, Tennessee Etiology Diagnosis	5 R01 EY00344-09	351	09/01/75-08/31/77 09/01/73-08/31/77 A	28,787	11,661	40,448	86,052
FARRELL, RICHARD A Light Scattering Studies of Ocular Tissues Johns Hopkins University Baltimore, Maryland Etiology	2 R01 EY01019-04	352	06/01/76-05/31/77 06/01/76-05/31/79 D	52,349	34,783	57,132	161,453
FINE, BEN S Electron Microscopy in Ocular Pathology Universities Associated for Research and Education in Pathology, Inc. Bethesda, Maryland Etiology	5 R01 EY00133-07	353	05/01/76-04/30/77 05/01/75-04/30/78 D	42,558	6,647	49,205	130,728
FISCHBARG, JORGE Bioelectrical Properties of Corneal Endothelium Columbia University New York, New York Etiology	2 R01 EY01080-04	354	05/01/76-04/30/77 05/01/76-04/30/79 D	38,020	9,811	47,831	148,599
FISCHBARG, JORGE Corneal Transparency and Active Transport Mechanisms Columbia University New York, New York Etiology	5 R01 EY00727-06	355	05/01/76-04/30/77 05/01/74-04/30/77 D	22,519	7,729	30,248	92,964
FORSTER, RICHARD K Diagnosis and Management of Fusarium Keratomycoses University of Miami Miami, Florida Etiology Treatment	5 R01 EY00674-05	356	05/01/76-04/30/77 05/12/75-04/30/78 A	36,786	15,956	52,742	124,514
GEHARDT, BRYAN M Prolongation of Cornea Allograft Survival by Antibody University of Miami Gainesville, Florida Treatment	5 R01 EY01395-03	357	06/30/76-06/29/77 06/30/74-06/29/77 E	31,463	13,521	44,984	108,537
GRAYSTON, J THOMAS Prevention of Trachoma and Related Infections University of Washington Seattle, Washington Etiology Diagnosis Treatment	5 R01 EY00219-16	358	12/01/75-11/30/76 12/01/73-11/30/78 A	130,804	31,422	162,226	528,032



Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
HALL, JOAN M The Nature and Sequence of Ocular Immune Responses University of California, San Francisco Proctor Foundation for Research in Ophthalmology San Francisco, California Etiology	5 R01 EY01182-02	359	05/01/76-04/30/77 05/01/74-04/30/77 D	35,687	12,205	47,892	100,870
Henley, Walter L Common Human and Animal Antigens in Cornea Mount Sinai School of Medicine Pediatrics New York, New York Etiology	1 R01 EY01689-01A1	360	09/30/76-09/29/77 09/30/76-09/29/79 A	57,983	34,005	91,988	174,193
HENLEY, WALTER L Pathogenic Mechanisms of Chronic Eye Disease Mount Sinai School of Medicine Ophthalmology New York, New York Diagnosis	5 R01 EY00145-06	361	02/01/75-07/31/76 02/01/73-07/31/76 A	*			167,988
HOLLY, FRANK J Surface Chemical Investigation of Dry Eye Conditions Eye Research Institute of Retina Foundation Cornea Research Boston, Massachusetts Etiology	5 R01 EY01381-02	362	06/01/76-05/31/77 06/01/75-05/31/77 B	29,045	15,402	44,447	53,125
HOVANESIAN, JOSEPH D Use of Moire Technique to Measure Corneal Topography Oakland University Rochester, Michigan Diagnosis Treatment	5 R01 EY00993-02	363	09/01/74-09/30/76 01/01/73-09/30/76 C	*			56,556
HULL, DAVID S Ophthalmic Medications and the Corneal Endothelium Medical College of Georgia Ophthalmology Augusta, Georgia Treatment	1 R23 EY01654-01	364	04/01/76-03/31/77 04/01/76-03/31/78 D	7,493	690	8,183	14,993
IWAMOTO, TAKEO Electron Microscopy of the Eye Columbia University Ophthalmology New York, New York Etiology Diagnosis	5 R01 EY00190-20	365	11/01/75-06/30/77 11/01/71-06/30/77 D	82,163	27,960	110,123	321,538
JAWETZ, ERNEST Viral Keratoconjunctivitis and Related Disorders University of California, San Francisco Microbiology San Francisco, California Etiology Diagnosis Treatment	2 R01 EY00186-22	366	03/01/76-11/30/76 03/01/76-11/30/80 A	73,747	25,221	98,968	401,842
JOHNSON, MARY K Role of Microbial Cytolysins in Ocular Infections Tulane University Ophthalmology New Orleans, Louisiana Etiology Diagnosis	5 R01 EY00424-08	367	06/01/76-05/31/77 06/01/75-05/31/78 A	34,103	14,316	48,419	102,347
KAUFMAN, HERBERT E Corneal Preservation and Keratoplasty University of Florida Ophthalmology Gainesville, Florida Etiology Treatment	5 R01 EY00266-13	368	06/01/76-05/31/77 06/01/72-05/31/77 E	36,535	10,881	47,416	145,814
KAUFMAN, HERBERT E Ocular Herpes Simplex University of Florida Ophthalmology Gainesville, Florida Treatment	5 R01 EY00007-15	369	02/01/76-01/31/77 02/01/75-01/31/80 A	66,066	24,082	90,148	272,079



Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
KLINTWORTH, GORDON K Experimental Approach to Diseases of the Cornea Duke University Pathology Durham, North Carolina Etiology Diagnosis	5 R01 EY00146-05	370	02/01/76-01/31/77 02/01/75-01/31/78 D	26,993	9,591	36,584	81,044
KREGER, ARNOLD S Pathogenesis of Bacterial Infections of the Cornea Wake Forest University Microbiology Winston-Salem, North Carolina Etiology Treatment	2 R01 EY01104-04	371	03/01/76-12/31/76 03/01/76-12/31/79 A	25,950	9,907	35,857	90,727
LAING, RONALD A Studies of the Corneal Endothelium of the Eye Boston University Ophthalmology Boston, Massachusetts Etiology	2 R01 EY01227-02	372	06/01/76-05/31/77 06/01/76-05/31/79 D	65,778	24,689	90,467	190,933
LEIBOWITZ, HOWARD M Studies in Corneal Transplantation Boston University Ophthalmology Boston, Massachusetts Etiology	5 R01 EY00544-07	373	06/01/76-05/31/77 06/01/75-05/31/78 E	56,694	22,353	79,047	169,493
LIM, JONG J Standing-Gradients in Corneal Endothelium Columbia University Ophthalmology New York, New York Etiology	1 R23 EY01422-01	374	06/30/75-06/29/77 06/30/75-06/29/77 D	*			7,290
MANSKI, WLADYSLAW J Effects of Antiocular Antibodies on Ocular Tissues Columbia University Ophthalmology New York, New York Etiology	5 R01 EY00198-18	375	05/01/76-04/30/77 05/01/74-04/30/79 A	42,779	13,468	56,247	167,454
MAURICE, DAVID M Control of Corneal Hydration Stanford University Surgery Stanford, California Etiology Diagnosis Treatment	5 R01 EY00431-08	376	02/01/76-01/31/77 02/01/75-01/31/78 D	143,121	83,432	226,553	459,901
MAURICE, DAVID M Transport Processes Across the Corneal Epithelium Stanford University Surgery Stanford, California Etiology	5 R01 EY00915-05	377	06/01/76-05/31/77 06/01/75-05/31/78 D	50,023	28,013	78,036	149,513
MCCAREY, BERNARD E An Improved Corneal Eye Bank Storage Technique University of Florida Ophthalmology Gainesville, Florida Etiology	1 R23 EY01374-01	378	06/30/75-06/29/77 06/30/75-06/29/78 E	*			11,649
McMahon, Thomas A Thermally Induced Ocular Deformation Harvard University Engineering and Applied Physics Cambridge, Massachusetts Etiology	1 R01 EY01907-01	379	09/30/76-09/29/77 09/30/76-09/29/78 D	27,030	11,528	38,558	55,483
METCALF, JOSEPH F Ultrastructural Studies of Disciform Keratitis University of Florida Ophthalmology Gainesville, Florida Etiology Diagnosis Treatment	5 R01 EY01580-02	380	06/30/76-06/29/77 06/30/75-06/29/77 A	40,605	18,815	59,420	66,897

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs
							Recom- mended For Project Period
MEYERS, ROBERTA L Mechanism of Corneal Inflammation in Herpes Keratitis University of California, Los Angeles Jules Stein Eye Institute Los Angeles, California Etiology	2 R01 EY00394-09	381	04/01/76-03/31/77 04/01/76-03/31/79 A	57,696	17,999	75,695	181,259
NESBURN, ANTHONY B Herpes Simplex of the Eye: Pathogenesis and Treatment Estelle Doheny Eye Foundation Corneal and Virology Research Unit Los Angeles, California Etiology Diagnosis Treatment	5 R01 EY00858-03	382	11/01/75-10/31/76 11/01/73-10/31/76 A	77,704	39,407	117,111	232,214
NICHOLS, ROGER L Type-Specific Antigen of Chlamydia Trachomatis Harvard University Center for Prevention of Infectious Diseases Boston, Massachusetts Etiology Treatment	5 R01 EY01568-02	383	06/30/76-06/29/77 06/30/75-06/29/77 A	32,946	19,109	52,055	63,542
O'DAY, DENIS M Studies in Experimental Fungal Endophthalmitis Vanderbilt University Ophthalmology Nashville, Tennessee Treatment	1 R01 EY01621-01	384	04/01/76-03/31/77 04/01/76-03/31/79 A	37,643	14,047	51,690	119,452
Oh, Jang O Eye Infections by Type 2 Herpes Simplex Virus University of California, San Francisco Ophthalmology San Francisco, California Etiology Diagnosis Treatment	1 R01 EY01578-01	385	09/30/76-09/29/77 09/30/76-09/29/79 A	24,336	7,057	31,393	80,598
OSTLER, H BRUCE Ocular Zoonoses: The Chlamydial Infections University of California, San Francisco Proctor Foundation for Research in Ophthalmology San Francisco, California Etiology	5 R01 EY01205-02	386	06/30/76-06/29/77 06/30/75-06/29/78 A	39,806	13,614	53,420	118,526
OZANICS, VICTORIA Functional Development of the Eye Columbia University Ophthalmology New York, New York Etiology	5 R01 EY00184-23	387	01/01/76-12/31/76 01/01/73-12/31/77 D	45,348	15,886	61,234	196,088
PATIL, POPAT N Iris Color and Ocular Drug Effects Ohio State University Pharmacology Columbus, Ohio Etiology	5 R01 EY01308-02	388	06/01/76-05/31/77 06/01/75-05/31/78 B	12,400	6,144	18,544	37,200
PFISTER, ROSWELL R Surface Corneal Epithelium in Disease States Eye Foundation Hospital Surgery Birmingham, Alabama Etiology Diagnosis	7 R01 EY01913-01	389	06/01/76-05/31/77 06/01/76-05/31/77 B	34,010	8,719	42,729	34,010
POLACK, FRANK M Changes in Corneal Grafts and Tissues University of Florida Ophthalmology Gainesville, Florida Etiology	5 R01 EY00415-08	390	06/01/76-05/31/77 06/01/75-05/31/78 E	26,657	10,357	37,014	80,696
REHM, WARREN S Fluid and Electrolyte Transport in the Cornea University of Alabama in Birmingham Physiology and Biophysics Birmingham, Alabama Etiology	5 R01 EY00456-08	391	12/01/75-11/30/76 12/01/71-11/30/76 D	30,791	10,265	41,056	126,855

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
RILEY, MICHAEL V Control of Corneal Hydration and Transparency Oakland University Rochester, Michigan Etiology	5 R01 EY00541-06	392	05/01/75-08/31/76 05/01/73-08/31/78 D	*			185,688
Robinson, Joseph R Ocular Drug Pharmacokinetics from Multiple Doses University of Wisconsin, Madison Madison, Wisconsin Etiology	1 R01 EY01681-01	393	09/30/76-09/29/77 09/30/76-09/29/78 B	14,488	5,244	19,732	29,509
ROBINSON, JOSEPH R Quantitation of Precorneal Drug Movement in the Eye University of Wisconsin, Madison Madison, Wisconsin Etiology	5 R01 EY01332-02	394	06/30/76-06/29/77 06/30/75-06/29/78 B	11,264	5,179	16,443	35,592
RUBIN, ALBERT L Modified Collagen for Ophthalmic Drug Delivery Cornell University Medical Center Biochemistry New York, New York Treatment	5 R01 EY01502-02	395	06/30/76-06/29/77 06/30/75-06/29/77 B	35,495	20,700	56,195	68,570
SAWICKI, LEON Recurrent Herpes Simplex Eye Disease Montefiore Hospital and Medical Center New York, New York Etiology Treatment	7 R01 EY01918-01	396	05/01/76-04/30/77 05/01/76-04/30/77 A	71,286	17,558	88,844	75,286
SERY, THEODORE W Experimental Herpesvirus Corneal Infections Wills Eye Hospital Research Philadelphia, Pennsylvania Etiology Treatment	5 R01 EY01454-02	397	06/01/76-05/31/77 06/01/75-05/31/77 A	49,088	16,199	65,287	97,608
SERY, THEODORE W Response of Corneal Stroma to Injections of Proteins Wills Eye Hospital Microbiology Philadelphia, Pennsylvania Diagnosis	2 R01 EY00195-19	398	06/01/76-03/31/77 06/01/76-03/31/79 A	48,925	15,980	64,905	177,985
SETTLER, SHERIDAN H, JR Culture of Suspected Viruses in Human Ocular Disease Tuskegee Institute Tuskegee Institution, Alabama Etiology Diagnosis	5 R01 EY01173-02	399	03/01/76-02/28/77 03/15/75-02/28/78 A	27,030	8,101	35,131	118,716
SILVERSTEIN, ARTHUR M Studies in Ocular Hypersensitivity Johns Hopkins University Ophthalmology Baltimore, Maryland Etiology Diagnosis	5 R01 EY00217-16	400	01/01/76-12/31/76 01/01/74-12/31/78 A	30,580	14,438	45,018	123,940
SMITH, RICHARD S Ultrastructural Study of Ocular Vascular Permeability Albany Medical College Ophthalmology Albany, New York Etiology	2 R01 EY00538-07	401	05/01/76-04/30/77 05/01/76-04/30/79 D	39,330	13,207	52,537	122,756
SMOLIN, GILBERT The Afferent Arc of Corneal Immunologic Reactions University of California, San Francisco Proctor Foundation for Research in Ophthalmology San Francisco, California Etiology	5 R01 EY01121-03	402	09/01/75-08/31/76 09/01/73-08/31/77 A	44,207	14,777	58,984	131,068

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
SRINIVASAN, B D Cell Division and Differentiation in the Conjunctiva Columbia University Ophthalmology New York, New York Etiology	5 R23 EY01557-02	403	06/01/76-05/31/77 06/01/75-05/31/78 B	7,380	2,288	9,668	22,140
STARK, WALTER J The Role of HL-A Antigens in Corneal Transplantation Johns Hopkins University Ophthalmology Baltimore, Maryland Etiology	5 R01 EY01302-03	404	06/30/76-06/29/77 06/30/74-06/29/77 E	39,795	19,102	58,897	118,137
VAN HORN, DIANE L Regenerative Capacity of Corneal Endothelium Medical College of Wisconsin Ophthalmology Milwaukee, Wisconsin Etiology Diagnosis Treatment	5 R01 EY01436-02	405	06/01/76-05/31/77 06/01/75-05/31/77 E	28,146	7,207	35,353	55,596
WEIMAR, VIRGINIA L Reaction of Corneal Cells to Injury University of Oregon Health Sciences Center Ophthalmology Portland, Oregon Etiology	5 R01 EY00238-15	406	09/01/75-08/31/76 09/01/72-08/31/77 E	71,981	21,450	93,431	269,608
WOLF, GEORGE D Vitamin A and Glycoproteins of Cornea Massachusetts Institute of Technology Nutrition and Food Science Cambridge, Massachusetts Etiology	2 R01 EY00515-08	407	05/01/76-04/30/77 05/01/76-04/30/79 D	38,154	16,639	54,793	124,575
YANKEELOV, JOHN A, JR Covalent Control of Cornea-Damaging Collagenase University of Louisville Biochemistry Louisville, Kentucky Etiology Treatment	5 R01 EY00969-04	408	09/01/75-10/31/76 09/01/72-10/31/76	43,781	22,899	66,680	124,112
ZADUNAISKY, JOSE A Corneal Electrophysiology New York University Ophthalmology New York, New York Etiology	5 R01 EY01340-03	409	10/01/75-11/30/76 10/01/73-11/30/77 D	66,943	32,938	99,881	240,144
Total Active Grants for Program: 92			Total Dollars				
Total Grants for Programs Receiving FY 1976 Funds: 78			for Program:	3,395,279	1,226,317	4,621,596+	11,758,280

\*Prior year funding

+16 grants received an additional \$252,677 in supplemental awards



Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
<b>NATIONAL EYE INSTITUTE RESEARCH PROJECT GRANTS ACTIVE FY 1976 — SUBPROGRAM LISTING</b>			
<b>A. External Ocular Infections and Inflammatory Diseases</b>			
ALLANSMITH, MATHEA R	Studies in Ocular Immunology	Eye Research Institute of Retina Foundation	97,440
ANDREWS, JOHN S	Corneal Metabolism	Vanderbilt University	*
BARON, SAMUEL	Acute Hemorrhagic Conjunctivitis and Interferon	University of Texas Medical Branch, Galveston	55,108
DAVIS, STARKEY D	Experimental Pseudomonas Keratitis	Medical College of Wisconsin	33,482
DAWSON, CHANDLER R	Pathogenesis and Early Diagnosis of Eye Inflammations	University of California, San Francisco	50,158
DAWSON, CHANDLER R	Analysis of Problems in Ocular Inflammatory Diseases	University of California, San Francisco	115,554
EDWARDS, JOHN E	Candida Albicans Hematogenous Endophthalmitis	Los Angeles County Harbor General Hospital	50,488
ELLIOTT, JAMES H	Studies of Ocular Hypersensitivity	Vanderbilt University	40,448
FORSTER, RICHARD K	Diagnosis and Management of Fusarium Keratomycoses	University of Miami	52,742
GRAYSTON, J THOMAS	Prevention of Trachoma and Related Infections	University of Washington	162,226
Henley, Walter L	<i>Common Human and Animal Antigens in Cornea</i>	<i>Mount Sinai School of Medicine</i>	91,988
HENLEY, WALTER L	Pathogenic Mechanisms of Chronic Eye Disease	Mount Sinai School of Medicine	*
JAWETZ, ERNEST	Viral Keratoconjunctivitis and Related Disorders	University of California, San Francisco	98,968
JOHNSON, MARY K	Role of Microbial Cytolysins in Ocular Infections	Tulane University	48,419
KAUFMAN, HERBERT E	Ocular Herpes Simplex	University of Florida	90,148
KREGER, ARNOLD S	Pathogenesis of Bacterial Infections of the Cornea	Wake Forest University	35,857
MANSKI, WLADYSLAW J	Effects of Antiocular Antibodies on Ocular Tissues	Columbia University	56,247
METCALF, JOSEPH F	Ultrastructural Studies of Disciform Keratitis	University of Florida	59,420
MEYERS, ROBERTA L	Mechanism of Corneal Inflammation in Herpes Keratitis	University of California, Los Angeles	75,695
NESBURN, ANTHONY B	Herpes Simplex of the Eye: Pathogenesis and Treatment	Estelle Doheny Eye Foundation	117,111
NICHOLS, ROGER L	Type-Specific Antigen of Chlamydia Trachomatis	Harvard University	52,055
O'DAY, DENIS M	Studies in Experimental Fungal Endophthalmitis	Vanderbilt University	51,690
Oh, Jang O	<i>Eye Infections by Type 2 Herpes Simplex Virus</i>	<i>University of California, San Francisco</i>	31,393
OSTLER, H BRUCE	Ocular Zoonoses: The Chlamydial Infections	University of California, San Francisco	53,420
SAWICKI, LEON	Recurrent Herpes Simplex Eye Disease	Montefiore Hospital and Medical Center	88,844
SERY, THEODORE W	Experimental Herpesvirus Corneal Infections	Wills Eye Hospital	65,287
SERY, THEODORE W	Response of Corneal Stroma to Injections of Proteins	Wills Eye Hospital	64,905
SETTLER, SHERIDAN H, JR	Culture of Suspected Viruses in Human Ocular Disease	Tuskegee Institute	35,131
SILVERSTEIN, ARTHUR M	Studies in Ocular Hypersensitivity	Johns Hopkins University	45,018
SMOLIN, GILBERT	The Afferent Arc of Corneal Immunologic Reactions	University of California, San Francisco	58,984
Total Active Grants for Subprogram: 30			
Total Grants for Subprogram Receiving FY 76 Funds: 26			
Total Dollars for Subprogram:			1,754,845



Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
B. Dry Eyes and Tear Abnormalities, Epithelial Disorders, and Drug Delivery			
BAUM, JULES L	Ocular Penetration of Antibiotics in a Model	New England Medical Center Hospital	67,990
BLOUGH, HERBERT A	Surface Chemistry of the Cornea	Presbyterian-University of Pennsylvania Medical Center	*
BOTELHO, STELLA Y	Lacrimal Gland: Factors Influencing Secretion	University of Pennsylvania	49,979
BROWN, STUART I	Precorneal Tear Film	Eye and Ear Hospital of Pittsburgh	59,929
CAVANAGH, H DWIGHT	Biochemical Control of Growth in Corneal Epithelium	Emory University	91,960
DYBBS, ALEXANDER	Improvement of Corneal Contact Lens Design	Case Western Reserve University	60,652
HOLLY, FRANK J	Surface Chemical Investigation of Dry Eye Conditions	Eye Research Institute of Retina Foundation	44,447
PATIL, POPAT N	Iris Color and Ocular Drug Effects	Ohio State University	18,544
PFISTER, ROSWELL R	Surface Corneal Epithelium in Disease States	Eye Foundation Hospital	42,729
Robinson, Joseph R	Ocular Drug Pharmacokinetics from Multiple Doses	University of Wisconsin, Madison	19,732
ROBINSON, JOSEPH R	Quantitation of Precorneal Drug Movement in the Eye	University of Wisconsin, Madison	16,443
RUBIN, ALBERT L	Modified Collagen for Ophthalmic Drug Delivery	Cornell University Medical Center	56,195
SRINIVASAN, B D	Cell Division and Differentiation in the Conjunctiva	Columbia University	9,668
Total Grants for Subprogram: 13			
Total Grants for Subprogram Receiving FY 76 Funds: 11			
Total Dollars for Subprogram:			518,536

C. Refractive Problems and Contact Lenses

HOVANESIAN, JOSEPH D	Use of Moire Technique to Measure Corneal Topography	Oakland University	*
Total Active Grants for Subprogram: 1			
Total Grants for Subprogram Receiving FY 76 Funds: 0			
Total Dollars for Subprogram:			*

D. Corneal Edema, Dystrophies, and Inherited Disorders

BARR, RONALD E	Oxygen Consumption and Diffusion in Rabbit Cornea	University of Missouri, Columbia	58,616
BAUM, JULES L	Biochemistry of Normal and Dystrophic Corneas in Culture	New England Medical Center Hospital	110,760
BAUM, JULES L	Histochemistry of Corneal Disease in Tissue Culture	New England Medical Center Hospital	56,322
BERMAN, MICHAEL B	Regulation of Collagenase Activity in Ulceration	Eye Research Institute of Retina Foundation	57,670
BROWN, STUART I	Collagenolytic Systems in Normal and Diseased Corneas	Eye and Ear Hospital of Pittsburgh	41,113
COLES, WILLIAM H	Toxic and Traumatic Effects on Corneal Endothelium	Medical University of South Carolina	27,571
CONRAD, GARY W	Fibroblast Differentiation During Eye Development	Kansas State University	35,347
COOPERSTEIN, DEBORRA F	Ascorbic Acid Effects on Corneal Transport	Adelphi University	4,350
DIKSTEIN, SHABTAY	Survival of the Corneal Endothelium	Hebrew University of Jerusalem	25,643
EDELHAUSER, HENRY F	Pathogenesis of Corneal Edema After Intraocular Surgery	Medical College of Wisconsin	44,468
FARRELL, RICHARD A	Light Scattering Studies of Ocular Tissues	Johns Hopkins University	57,132

Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
FINE, BEN S	Electron Microscopy in Ocular Pathology	Universities Associated for Research and Education in Pathology, Inc.	49,205
FISCHBARG, JORGE	Bioelectrical Properties of Corneal Endothelium	Columbia University	47,831
FISCHBARG, JORGE	Corneal Transparency and Active Transport Mechanisms	Columbia University	30,248
HALL, JOAN M	The Nature and Sequence of Ocular Immune Responses	University of California, San Francisco	47,892
HULL, DAVID S	Ophthalmic Medications and the Corneal Endothelium	Medical College of Georgia	8,183
IWAMOTO, TAKEO	Electron Microscopy of the Eye	Columbia University	110,123
KLINTWORTH, GORDON K	Experimental Approach to Diseases of the Cornea	Duke University	36,584
LAING, RONALD A	Studies of the Corneal Endothelium of the Eye	Boston University	90,467
LIM, JONG J	Standing-Gradients in Corneal Endothelium	Columbia University	*
MAURICE, DAVID M	Control of Corneal Hydration	Stanford University	226,553
MAURICE, DAVID M	Transport Processes Across the Corneal Epithelium	Stanford University	78,036
McMahon, Thomas A	<i>Thermally Induced Ocular Deformation</i>	<i>Harvard University</i>	38,558
OZANICS, VICTORIA	Functional Development of the Eye	Columbia University	61,234
REHM, WARREN S	Fluid and Electrolyte Transport in the Cornea	University of Alabama in Birmingham	41,056
RILEY, MICHAEL V	Control of Corneal Hydration and Transparency	Oakland University	
SMITH, RICHARD S	Ultrastructural Study of Ocular Vascular Permeability	Albany Medical College	52,537
WOLF, GEORGE D	Vitamin A and Glycoproteins of Cornea	Massachusetts Institute of Technology	54,793
YANKEELOV, JOHN A, JR	Covalent Control of Cornea-Damaging Collagenase	University of Louisville	66,680
ZADUNAISKY, JOSE A	Corneal Electrophysiology	New York University	99,881
Total Active Grants for Subprogram: 30			
Total Grants for Subprogram Receiving FY 76 Funds: 27		Total Dollars for Subprogram:	1,620,295

## E. Corneal Transplantation and Stromal Injury and Repair

ANDERSON, ETHEL I	Intermediary Metabolism of the Cornea	Columbia University	58,837
ANDERSON, ETHEL I	Intermediary Metabolism of the Cornea	Columbia University	*
BRIGHTBILL, FREDERICK S	Corneal Preservation and Keratoplasty in Monkeys	University of Wisconsin, Madison	9,328
BURNS, ROBERT P	Biochemical Cytology of Metabolic Eye Diseases	University of Oregon Health Sciences Center	*
CALKINS, JOSEPH L	Holographic Stress-Testing of the Surgical Cornea	Johns Hopkins University	89,715
CHANDLER, JOHN W, JR	Immunopathology and Therapy of Corneal Disease	University of Washington	35,004
CINTRON, CHARLES	Corneal Macromolecules and Scar Formation	Eye Research Institute of Retina Foundation	42,860
CINTRON, CHARLES	Ultrastructure of Corneal Scar Tissue	Eye Research Institute of Retina Foundation	*
DONN, ANTHONY	Physiological Studies of the Living Cornea in Vitro	Columbia University	51,463
DOUGHMAN, DONALD J	Organ Culture of Corneas	University of Minnesota	44,571
GEBHARDT, BRYAN M	Prolongation of Cornea Allograft Survival by Antibody	University of Florida	44,984
KAUFMAN, HERBERT E	Corneal Preservation and Keratoplasty	University of Florida	47,416

Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
LEIBOWITZ, HOWARD M	Studies in Corneal Transplantation	Boston University	79,047
MCCAREY, BERNARD E	An Improved Corneal Eye Bank Storage Technique	University of Florida	*
POLACK, FRANK M	Changes in Corneal Grafts and Tissue	University of Florida	37,014
STARK, WALTER J	The Role of HL-A Antigens in Corneal Transplantation	Johns Hopkins University	58,897
VAN HORN, DIANE L	Regenerative Capacity of Corneal Endothelium	Medical College of Wisconsin	35,353
WEIMAR, VIRGINIA L	Reaction of Corneal Cells to Injury	University of Oregon Health Sciences Center	93,431
Total Active Grants for Subprogram: 18			
Total Grants for Subprogram Receiving FY 76 Funds: 14			Total Dollars for Subprogram: 727,920

F. Tumors and Other Lid, Conjunctival, and Orbital Problems

Total Active Grants for Program: 92		
Total Grants for Program Receiving FY 76 Funds: 78	Total Dollars for Program:	4,621,596 +

\* Prior year funding  
+ 16 grants received an additional \$252,677 in supplemental awards

Principal Investigator Title of Project Institution Department City and State	Grant Number	Entry Number	Current Budget Period Project Period	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
RESEARCH PROGRAM PROJECT GRANT ACTIVE FY 1976							
DOHLMAN, CLAES H Corneal Physiology and Pathology Eye Research Institute of Retina Foundation Cornea Research Boston, Massachusetts	5 P01 EY00208-16	409a	01/01/76-12/31/77 01/01/72-12/31/77	192,933	103,276	296,209	864,892
Total Grants for Program Receiving FY 1976 Funds: 1			Total Dollars for Program: 192,933 103,276 296,209 864,892				

Principal Investigator Title of Project Institution Department City and State	Grant Number	Entry Number	Current Budget Period Project Period	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
NATIONAL EYE INSTITUTE SPECIALIZED CLINICAL RESEARCH CENTER GRANT FY 1976							
KAUFMAN, HERBERT E External Ocular Disease Center University of Florida Ophthalmology Gainesville, Florida	5 P50 EY00446-08	410	10/01/75-11/30/76 10/01/73-11/30/78	221,776	99,591	321,367	1,164,234
Total Grants for Program Receiving FY 1976 Funds: 1			Total Dollars for Program:	221,776	99,591	321,367 +	1,164,234

+ This grant received an additional \$97,870 in a supplemental award

Principal Investigator Title of Project	Project Number	Entry Number	Current Budget Period Project Period	Fy 1976 Funding
NATIONAL EYE INSTITUTE INTRAMURAL RESEARCH PROJECTS ACTIVE FY 1976				
COULOMBRE, ALFRED J Sensitive Period in the Development of the Scleral Ossicles of the Avian Eye	Z01 EY00178-01 LVR	411	07/01/75-09/30/76 07/01/75-06/30/76	73,639
HELMSEN, RALPH J Chemistry of the Cornea	Z01 EY00111-04 LVR	412	07/01/75-09/30/76 07/01/75-06/30/76	13,053
HELMSEN, RALPH J Mechanism of Herpes Simplex Virus Infection of Corneal Cells	Z01 EY00147-03 LVR	413	07/01/75-09/30/76 07/01/75-06/30/76	13,053
HELMSEN, RALPH J Vitamin A Metabolism of the Cornea	Z01 EY00176-01 LVR	414	07/01/75-09/30/76 07/01/75-06/30/76	46,526
LEWIS, MARC S Physical Chemistry of Model Gel Systems	Z01 EY00009-05 LVR	415	07/01/75-09/30/76 07/01/75-06/30/76	15,650
NEWSOME, DAVID A Repair of DNA in Xeroderma Pigmentosum Conjunctiva	Z01 EY00180-01 LVR	416	07/01/75-09/30/76 07/01/75-06/30/76	60,949
WHIKEHART, DAVID R Intermediary Metabolism of the Cornea	Z01 EY00024-02 LVR	417	07/01/75-09/30/76 07/01/75-06/30/76	50,058
Total Projects for Program: 7			Total Dollars for Program:	272,928

### III. Cataract



## Subprograms

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### III. CATARACT

- A. The Normal Lens
- B. Senile or Degenerative Cataract
- C. Diabetic Cataract
- D. Congenital, Metabolic, and Genetic Cataracts
- E. Cataract Induced by Drugs and Radiation and Occurring Secondary to Other Eye Disorders
- F. Dislocated Lens
- G. Accommodation and Optical Problems of Cataract and Aphakia

### III. Cataract

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
NATIONAL EYE INSTITUTE RESEARCH PROJECT GRANTS ACTIVE FY 1976 — ALPHABETICAL LISTING							
AUGUSTEYN, ROBERT C The Mechanism of Senile Cataract Formation University of Melbourne Biochemistry Parkville, Australia Etiology	5 R01 EY01525-02	418	06/30/76-06/29/77 06/30/75-06/29/78 B	16,450	0	16,450	52,830
AZARI, PARVIZ Biochemical Investigation of a Hereditary Cataract Colorado State University Biochemistry Fort Collins, Colorado Etiology	5 R01 EY01065-03	419	04/01/76-03/31/77 04/01/74-03/31/77 D	32,036	19,025	51,061	102,024
Bagchi, Mihir Cell Biology of Mammalian Eye Lens in Culture Wayne State University Anatomy Detroit, Michigan Etiology	1 R01 EY01848-01	420	09/30/76-09/29/77 09/30/76-09/29/79 A	18,900	8,064	26,964	60,000
BARBER, G WINSTON Lens Metabolism and Experimental Cataract Wills Eye Hospital Biochemistry Philadelphia, Pennsylvania Etiology	5 R01 EY00225-15	421	06/30/76-06/29/77 06/30/74-06/29/77 B	53,720	19,617	73,337	175,182
BENEDEK, GEORGE B Physical and Chemical Basis of Lens Opacity Massachusetts Institute of Technology Physics Cambridge, Massachusetts Etiology	5 R01 EY00797-05	422	05/01/76-04/30/77 05/01/72-04/30/77 B	87,750	40,689	128,439	249,200
BENTLEY, PETER J Pharmacology of Lenticular Ion Transport Mount Sinai School of Medicine Pharmacology New York, New York Etiology	5 R01 EY01278-03	423	02/01/76-01/31/77 02/01/74-01/31/77 A	20,378	10,788	31,166	56,775
BETTELHEIM, FREDERICK A Opticomechanical Study of Gel Structures in the Eye Adelphi University Chemistry Garden City, New York Etiology	5 R01 EY00501-08	424	05/01/76-04/30/77 05/01/75-04/30/78 A	28,695	11,487	40,182	81,114
BETTELHEIM, FREDERICK A Polarization Studies in the Intact Eye Adelphi University Chemistry Garden City, New York Etiology	1 R01 EY01725-01	425	06/01/76-05/31/77 06/01/76-05/31/78 A	13,662	6,476	20,138	26,639
BHUYAN, KAILASH C Mechanism of Cataractogenesis Caused by Aminotriazole Eye Bank for Sight Restoration Biochemistry Laboratory New York, New York Etiology	5 R01 EY01731-02	426	06/30/76-06/29/77 06/30/75-06/29/78 E	43,440	12,762	56,202	130,641

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
BORKMAN, RAYMOND F Spectroscopic Characterization of Human Lenses Georgia Institute of Technology School of Chemistry Atlanta, Georgia Etiology	5 R01 EY01138-03	427	06/01/75-11/30/76 06/01/73-11/30/76 B	*			58,606
BUNCE, GEORGE E Cataract from a Vegetable Protein Based Diet Virginia Polytechnic Institute and State University Biochemistry and Nutrition Blacksburg, Virginia Etiology	2 R01 EY01060-06	428	04/01/76-03/31/77 04/01/76-03/31/79 B	31,740	14,326	46,066	99,431
BURNS, ROBERT P Hereditary Cataract in Peromyscus University of Oregon Health Sciences Center Ophthalmology Portland, Oregon Etiology	1 R01 EY01726-01	429	06/01/76-05/31/77 06/01/76-05/31/79 D	20,985	7,749	28,734	117,023
CANDIA, OSCAR A Electrolyte and Fluid Transport in Ocular Membranes Mount Sinai School of Medicine Ophthalmology New York, New York Etiology	5 R01 EY00160-06	430	06/01/75-11/30/76 06/01/73-11/30/76 A	*			156,517
CARPENTER, FREDERICK H Mechanism of Leucine Aminopeptidase University of California, Berkeley Biochemistry Berkeley, California Etiology	2 R01 EY00813-06	431	05/01/76-04/30/77 05/01/76-04/30/81 A	43,208	14,521	57,729	190,971
CHASE, HERMAN B Developmental Genetics of Anophthalmia Brown University Population Biology and Genetics Providence, Rhode Island Etiology	5 R01 EY01274-02	432	06/01/76-05/31/77 06/01/75-05/31/78 D	26,287	10,778	37,065	90,020
CHIPAULT, JACQUES R Lipids of the Triparanol Cataract University of Minnesota Hormel Institute Austin, Minnesota Etiology	5 R01 EY01424-02	433	09/01/75-11/30/76 09/01/74-11/30/76 E	30,081	10,927	41,008	67,599
CHYLACK, LEO T, JR Lens Metabolism and Cataract Formation Harvard University Howe Laboratory of Ophthalmology Boston, Massachusetts Etiology	5 R01 EY01276-03	434	02/01/76-01/31/77 02/15/74-01/31/77 A	20,198	9,669	29,867	166,545
COTLIER, EDWARD M Biochemical Studies in Normal and Cataractous Lenses University of Illinois Medical Center Ophthalmology Chicago, Illinois Etiology	5 R01 EY00703-06	435	06/01/76-08/31/76 06/01/74-08/31/76 B	33,379	19,751	53,130	127,929
COULTER, JOHN B, III Measurement of Insulin in Aqueous and Vitreous of Rabbit Scott and White Memorial Hospital Research Temple, Texas Etiology	5 R01 EY00404-06	436	05/01/76-06/30/77 05/01/75-06/30/77 C	25,180	10,072	35,252	57,040
DOHERTY, PAUL M Diffusion of Proteins in Intact Cataractous Lenses Oakland University Physics Rochester, Michigan Etiology	1 R01 EY01698-01	437	06/01/76-05/31/77 06/01/76-05/31/78 B	34,315	7,489	41,804	57,682

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs
							Recommended For Project Period
DOHLMAN, CLAES H Studies of Iris Ultrastructure Harvard University Ophthalmology Boston, Massachusetts Etiology	5 R01 EY00425-04	438	02/01/72-01/31/77 02/01/69-01/31/77 A	*			151,987
DOHLMAN, CLAES H Metabolism of the Normal and Abnormal Ocular Lens Harvard University Howe Laboratory of Ophthalmology Boston, Massachusetts Etiology Diagnosis	5 R01 EY00170-05	439	02/01/74-01/31/77 02/01/70-01/31/77 A	*			177,666
DOUGHTY, CLYDE C Aldose Reductase Subunits University of Illinois Medical Center Biological Chemistry Chicago, Illinois Etiology	5 R01 EY00449-06	440	04/01/76-03/31/77 04/01/74-03/31/77 A	24,483	11,833	36,316	64,593
FARNSWORTH, PATRICIA N Comparative Study of Aging of the Crystalline Lens College of Medicine and Dentistry of New Jersey Medicine Newark, New Jersey Etiology	5 R01 EY01533-02	441	06/01/76-05/31/77 06/01/75-05/31/77 B	26,229	5,696	31,925	105,355
FU, S JOSEPH Progression of Cataractogenesis and Possible Reversal College of Medicine and Dentistry of New Jersey Biochemistry Newark, New Jersey Etiology	5 R01 EY01156-03	442	03/01/76-02/28/77 03/01/74-02/28/77 B	37,374	15,469	52,843	137,960
FUJIMORI, EIJI Blue-Fluorescent Lens Proteins Boston Biomedical Research Institute Boston, Massachusetts Etiology	1 R01 EY01810-01	443	06/01/76-05/31/77 06/01/76-05/31/79 A	45,000	24,035	69,035	140,804
GORTHY, WILLIS C Morphological and Histochemical Studies of the Lens Colorado State University Anatomy Fort Collins, Colorado Etiology	5 R01 EY00378-08	444	05/01/76-11/30/77 05/01/74-11/30/77 B	46,084	25,392	71,476	139,996
HANNA, CALVIN Biochemical Studies on Lens Cataract Formation University of Arkansas Medical Sciences Campus Pharmacology Little Rock, Arkansas Etiology	5 R01 EY00239-15	445	06/30/76-06/29/77 06/30/74-06/29/77 B	19,555	6,295	25,850	38,055
HARRIS, JOHN E Studies of the Triparanol Cataract University of Minnesota Ophthalmology Minneapolis, Minnesota Etiology	5 R01 EY01200-03	446	06/30/76-06/29/77 06/30/74-06/29/79 E	29,168	10,154	39,322	115,836
HERSH, ROBERT T Properties of Alpha Crystallin of the Lens University of Kansas Biochemistry Lawrence, Kansas Etiology	1 R01 EY01702-01	447	06/01/76-05/31/77 06/01/76-05/31/79 A	25,411	6,569	31,980	65,272
HORWITZ, JOSEPH Biophysical and Biochemical Studies of Lens Proteins University of California, Los Angeles Jules Stein Eye Institute Los Angeles, California Etiology	1 R01 EY01622-01	448	06/01/76-05/31/77 06/01/76-05/31/79 A	54,970	13,670	68,640	146,400

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs
							Recom- mended For Project Period
KATOH, ARTHUR K Ultrastructural Immunocytochemistry of Lens Crystallins Mercy Hospital of Pittsburgh Pittsburgh, Pennsylvania Etiology	5 R01 EY00908-02	449	10/01/75-09/30/76 10/04/74-09/30/76 A	18,117	0	18,117	33,523
KERN, HAROLD L Transport Processes in Ocular Tissues Yeshiva University Ophthalmology New York, New York Etiology	5 R01 EY00268-13	450	01/01/76-03/31/77 01/01/72-03/31/77 A	56,768	36,101	92,869	208,515
KERN, HAROLD L Relation of Transport to Metabolism of Glutathione Yeshiva University Ophthalmology New York, New York Etiology	5 R01 EY00131-06	451	05/01/76-04/30/77 05/01/74-04/30/77 A	19,000	11,376	30,376	58,625
KINSEY, V EVERETT Intraocular Fluid Dynamics Oakland University Rochester, Michigan Etiology	5 R01 EY00483-08	452	05/01/76-04/30/77 05/01/74-04/30/78 A	58,904	25,014	83,918	256,524
KUCK, JOHN F, JR Lens Metabolism in Normal and Pre-Cataractous States Emory University Ophthalmology Atlanta, Georgia Etiology	5 R01 EY00260-13	453	09/01/75-08/31/76 09/01/71-08/31/76 A	43,007	19,094	62,101	148,679
LERMAN, SIDNEY Lens Proteins and Fluorescence: In Vivo and In Vitro Study Emory University Ophthalmology Atlanta, Georgia Etiology	5 R01 EY01575-02	454	06/01/76-05/31/77 06/01/75-05/31/78 A	62,794	24,686	87,480	173,021
LI, LU-KU Subunit Interactions of Lens Protein Columbia University Ophthalmology New York, New York Etiology	5 R01 EY00032-05	455	06/30/75-06/30/76 06/30/74-06/30/77 C	*			126,463
MAISEL, HARRY A Study of Structural Lens Proteins Wayne State University Anatomy Detroit, Michigan Etiology	5 R01 EY01417-02	456	09/01/75-08/31/76 09/01/74-08/31/77 A	27,400	12,923	40,323	82,300
MAKMAN, MAYNARD H Role of Cyclic AMP in Lens Maturation and Disease Yeshiva University Biochemistry New York, New York Etiology	5 R01 EY00873-03	457	04/01/76-03/31/77 04/01/74-03/31/77 B	26,149	13,686	39,835	80,734
MANSKI, WLADYSLAW J Immunological Observations on Ocular Lens in Cataract Columbia University Ophthalmology New York, New York Etiology	5 R01 EY00189-21	458	06/01/76-05/31/77 06/01/72-05/31/77 B	87,961	27,369	115,330	312,231
MARAK, GEORGE E, JR Lens-Induced Uveitis and Sympathetic Ophthalmia Georgetown University Ophthalmology Washington, District of Columbia Etiology	5 R01 EY00887-05	459	02/01/76-01/31/77 02/01/75-01/31/78 B	58,451	19,657	78,108	176,990



Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs
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ORTWERTH, BERYL J Role of tRNA in the Control of Lens Protein Synthesis University of Missouri, Columbia Ophthalmology Columbia, Missouri Etiology	5 R01 EY00786-05	460	05/01/76-04/30/77 05/01/75-04/30/78 A	34,452	13,030	47,482	110,652
PATERSON, CHRISTOPHER A Regulation of Lens Cation Balance and Distribution University of Colorado Medical Center Surgery Denver, Colorado Etiology	5 R01 EY00506-08	461	05/01/76-04/30/77 05/01/75-04/30/80 A	45,949	11,451	57,400	209,929
PATTERSON, JOHN W Experimental Cataracts University of Connecticut Health Center Physiology Farmington, Connecticut Etiology	5 R01 EY00902-12	462	04/01/76-03/31/77 04/01/74-03/31/79 B	22,498	9,583	32,081	89,205
PECZON, BENIGNO D Diabetic, Cataractous and Normal Human Lens Capsules Eye Research Institute of Retina Foundation Retina Research Boston, Massachusetts Etiology	5 R01 EY01564-02	463	06/01/76-05/31/77 06/01/75-05/31/78 C	28,077	14,325	42,402	85,420
PELTZ, RICHARD Cataract and Lens Deterioration Due to Maturation Wills Eye Hospital Ophthalmic Cellular Biology Philadelphia, Pennsylvania Etiology	5 R01 EY00555-06	464	01/01/76-02/28/77 01/01/74-02/28/77 A	36,677	12,024	48,701	113,582
RAE, JAMES L Normal and Cataractous Lens Cell Bioelectric Properties University of Texas Medical Branch, Galveston Ophthalmology Galveston, Texas Etiology	2 R01 EY01207-02	465	05/01/76-04/30/77 05/01/76-04/30/79 A	43,473	10,103	53,576	109,715
RAFFERTY, NANCY S Etiology of Cataract Northwestern University Chicago, Illinois Etiology	5 R01 EY00698-06	466	01/01/76-12/31/76 01/01/72-12/31/76 B	19,480	8,981	28,461	83,410
RATHBUN, WILLIAM B Glutathione Metabolism in Ocular Tissues University of Minnesota Minneapolis, Minnesota Etiology	5 R01 EY01197-03	467	09/01/75-12/31/76 09/01/73-12/31/76 A	44,927	16,123	61,050	136,105
REDDAN, JOHN R Control of Cell Division in the Ocular Lens Oakland University Biological Sciences Rochester, Michigan Etiology	5 R01 EY00362-09	468	09/01/75-08/31/76 09/01/71-08/31/76 A	46,047	20,360	66,407	173,580
REDDY, VENKAT N Intraocular Transport Oakland University Rochester, Michigan Etiology	5 R01 EY00484-09	469	05/01/76-04/30/77 05/01/74-04/30/79 A	73,820	29,684	103,504	309,133
REYER, RANDALL W Lens and Neural Retina Development and Regeneration West Virginia University Anatomy Morgantown, West Virginia Etiology	5 R01 EY00196-19	470	01/01/76-12/31/76 01/01/73-12/31/77 A	17,868	5,061	22,929	73,844

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
RICHARDS, RICHARD D Histochemical Changes in Experimental Cataracts University of Maryland at Baltimore Ophthalmology Baltimore, Maryland Etiology	5 R01 EY01292-03	471	06/01/76-05/31/77 06/15/74-05/31/77 B	13,708	9,469	23,177	87,077
ROTHSTEIN, HOWARD Wound Healing in Lens Epithelium University of Vermont and State Agricultural College Zoology Burlington, Vermont Etiology	5 R01 EY00281-12	472	05/01/76-04/30/77 05/01/72-04/30/77 A	38,395	21,920	60,315	164,071
SANDERS, DONALD R A Biochemical Classification for Cataractous Lenses University of Illinois Medical Center Ophthalmology Chicago, Illinois Etiology Diagnosis	5 R23 EY01446-02	473	06/30/76-06/29/77 06/30/75-06/29/78 B	7,500	3,600	11,100	22,598
SCHACHAR, RONALD A Raman Spectroscopy of the Lens of the Eye University of Texas Health Sciences Center, Dallas Biophysics Dallas, Texas Etiology	1 R01 EY01818-01	474	06/01/76-05/31/77 06/01/76-05/31/78 A	13,764	0	13,764	45,259
SOLIN, STUART A Raman Spectroscopic Studies of the Lens of the Eye University of Chicago Physics Chicago, Illinois Etiology	1 R01 EY01623-01A1	475	06/01/76-05/31/77 06/01/76-05/31/78 A	23,765	9,715	33,480	29,059
SPECTOR, ABRAHAM Studies of the Effects of Aging on the Ocular Lens Columbia University Ophthalmology New York, New York Etiology	5 R01 EY00759-05	476	10/01/75-11/30/76 10/01/71-11/30/76 B	58,815	18,233	77,048	249,189
SPECTOR, ABRAHAM Studies Upon the Ocular Lens Columbia University Ophthalmology New York, New York Etiology	5 R01 EY00423-08	477	12/01/75-11/30/76 12/01/73-11/30/78 A	96,272	30,670	126,942	397,275
SRIVASTAVA, SATISH K Metabolic Studies in Normal and Cataractous Lenses University of Texas Medical Branch, Galveston Human Biology, Chemistry and Genetics Galveston, Texas Etiology	5 R01 EY01677-02	478	06/01/76-05/31/77 06/01/75-05/31/78 A	16,467	7,655	24,122	51,054
STREETEN, BARBARA W The Fiber-Gel Structure of the Ocular Zonule Upstate Medical Center Ophthalmology Syracuse, New York Etiology	5 R01 EY01602-02	479	06/30/76-06/29/77 06/30/75-06/29/78 F	30,954	12,306	43,260	104,310
SWANSON, ARNOLD A Proteolysis in Normal and Senile Cataract Lens Medical University of South Carolina Biochemistry Charleston, South Carolina Etiology	5 R01 EY00429-08	480	05/01/76-04/30/77 05/01/75-04/30/80 B	32,025	11,960	43,985	133,515
TANAKA, TOYOICHI In Vivo Detection of Protein Aggregates in the Lens Massachusetts Institute of Technology Physics Cambridge, Massachusetts Etiology	1 R01 EY01696-01	481	05/01/76-04/30/77 05/01/76-04/30/79 A	23,400	6,223	29,623	95,203

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Serial Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs
							Recom- mended For Project Period
UNAKAR, NALIN J Morphological Studies in Experimental Cataracts Oakland University Biological Sciences Rochester, Michigan Etiology	1 R01 EY01680-01	482	06/01/76-05/31/77 06/01/76-05/31/79 B	31,742	11,127	42,869	99,072
VAN HEYNINGEN, RUTH E Cataracts in Rats Due to Dietary Deficit of Tryptophan University of Oxford Nuffield Laboratory of Ophthalmology Oxford, United Kingdom Etiology	5 R01 EY01548-02	483	06/01/76-05/31/77 06/30/75-05/31/78 B	24,012	0	24,012	73,462
YU, NAI-TENG Comparative Raman Studies of Human and Animal Lenses Georgia Institute of Technology School of Chemistry Atlanta, Georgia Etiology	1 R01 EY01746-01	484	05/01/76-04/30/77 05/01/76-04/30/79 A	17,929	8,251	26,180	57,626
ZIGLER, J SAMUEL, JR Developmental Studies of B-Crystallin Re Cataracts Duke University Pediatrics Durham, North Carolina Etiology	5 R01 EY01607-02	485	06/30/76-06/29/77 06/30/75-06/29/77 A	36,391	21,721	58,112	70,117
ZIGMAN, SEYMOUR Near Ultraviolet Light Effects on Ocular Tissues University of Rochester Surgery Rochester, New York Etiology	5 R01 EY00459-07	486	05/01/76-04/30/77 05/01/73-04/30/77 E	51,240	23,039	74,279	145,300
ZWAAN, JOHAN J Development and Growth of the Lens Albany Medical College Ophthalmology Albany, New York Etiology	7 R01 EY01694-01	487	06/30/75-07/31/76 06/30/75-07/31/77 D	*			117,300
Total Active Grants for Program: 70			Total Dollars				
Total Grants for Programs Receiving FY 1976 Funds: 63			for Program:	2,257,976	881,759	3,139,735+	18,314,896

\*Prior year funding

+3 grants received an additional \$80,806 in supplemental awards

Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
NATIONAL EYE INSTITUTE RESEARCH PROJECT GRANTS ACTIVE FY 1976 — SUBPROGRAM LISTING			
A. The Normal Lens			
Bagchi, Mihir	Cell Biology of Mammalian Eye Lens in Culture	Wayne State University	26,964
BENTLEY, PETER J	Pharmacology of Lenticular Ion Transport	Mount Sinai School of Medicine	31,166
BETTELHEIM, FREDERICK A	Opticomechanical Study of Gel Structures in the Eye	Adelphi University	40,182
BETTELHEIM, FREDERICK A	Polarization Studies in the Intact Eye	Adelphi University	20,138
CANDIA, OSCAR A	Electrolyte and Fluid Transport in Ocular Membranes	Mount Sinai School of Medicine	*
CARPENTER, FREDERICK H	Mechanism of Leucine Aminopeptidase	University of California, Berkeley	57,729
CHYLACK, LEO T, JR	Lens Metabolism and Cataract Formation	Harvard University	29,867
DOHLMAN, CLAES H	Metabolism of the Normal and Abnormal Ocular Lens	Harvard University	*
DOHLMAN, CLAES H	Studies of Iris Ultrastructure	Harvard University	*
DOUGHTY, CLYDE C	Aldose Reductase Subunits	University of Illinois Medical Center	36,316
FUJIMORI, EIJI	Blue-Fluorescent Lens Proteins	Boston Biomedical Research Institute	69,035
HERSH, ROBERT T	Properties of Alpha Crystallin of the Lens	University of Kansas	31,980
HORWITZ, JOSEPH	Biophysical and Biochemical Studies of Lens Proteins	University of California, Los Angeles	68,640
KATOH, ARTHUR K	Ultrastructural Immunocytochemistry of Lens Crystallins	Mercy Hospital of Pittsburgh	18,117
KERN, HAROLD L	Transport Processes in Ocular Tissues	Yeshiva University	92,869
KERN, HAROLD L	Relation of Transport to Metabolism of Glutathione	Yeshiva University	30,376
KINSEY, V EVERETT	Intraocular Fluid Dynamics	Oakland University	83,918
KUCK, JOHN F, JR	Lens Metabolism in Normal and Pre-Cataractous States	Emory University	62,101
LERMAN, SIDNEY	Lens Proteins and Fluorescence: In Vivo and in Vitro Study	Emory University	87,480
MAISEL, HARRY	A Study of Structural Lens Proteins	Wayne State University	40,323
ORTWERTH, BERYL J	Role of tRNA in the Control of Lens Protein Synthesis	University of Missouri, Columbia	47,482
PATERSON, CHRISTOPHER A	Regulation of Lens Cation Balance and Distribution	University of Colorado Medical Center	57,400
PELTZ, RICHARD	Cataract and Lens Deterioration Due to Maturation	Wills Eye Hospital	48,701
RAE, JAMES L	Normal and Cataractous Lens Cell Bioelectric Properties	University of Texas Medical Branch, Galveston	53,576
RATHBUN, WILLIAM B	Glutathione Metabolism in Ocular Tissues	University of Minnesota	61,050
REDDAN, JOHN R	Control of Cell Division in the Ocular Lens	Oakland University	66,407
REDDY, VENKAT N	Intraocular Transport	Oakland University	103,504
REYER, RANDALL W	Lens and Neural Retina Development and Regeneration	West Virginia University	22,929
ROTHSTEIN, HOWARD	Wound Healing in Lens Epithelium	University of Vermont and State Agricultural College	60,315
SCHACHAR, RONALD A	Raman Spectroscopy of the Lens of the Eye	University of Texas Health Sciences Center, Dallas	13,764
SOLIN, STUART A	Raman Spectroscopic Studies of the Lens of the Eye	University of Chicago	33,480
SPECTOR, ABRAHAM	Studies Upon the Ocular Lens	Columbia University	126,942



Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
SRIVASTAVA, SATISH K	Metabolic Studies in Normal and Cataractous Lenses	University of Texas Medical Branch, Galveston	24,122
TANAKA, TOYOICHI	In Vivo Detection of Protein Aggregates in the Lens	Massachusetts Institute of Technology	29,623
YU, NAI-TENG	Comparative Raman Studies of Human and Animal Lenses	Georgia Institute of Technology	26,180
ZIGLER, J SAMUEL, JR	Developmental Studies of B-Crystallin Re Cataracts	Duke University	58,112
Total Active Grants for Subprogram: 36			
Total Grants for Subprogram Receiving FY 76 Funds: 32			
Total Dollars for Subprogram:			1,633,824

## B. Senile or Degenerative Cataract

AUGUSTEYN, ROBERT C	The Mechanism of Senile Cataract Formation	University of Melbourne	16,450
BARBER, G WINSTON	Lens Metabolism and Experimental Cataract	Wills Eye Hospital	73,337
BENEDEK, GEORGE B	Physical and Chemical Basis of Lens Opacity	Massachusetts Institute of Technology	128,439
BORKMAN, RAYMOND F	Spectroscopic Characterization of Human Lenses	Georgia Institute of Technology	*
BUNCE, GEORGE E	Cataract from a Vegetable Protein Based Diet	Virginia Polytechnic Institute and State University	46,066
COTLIER, EDWARD M	Biochemical Studies in Normal and Cataractous Lenses	University of Illinois Medical Center	53,130
DOHERTY, PAUL M	Diffusion of Proteins in Intact Cataractous Lenses	Oakland University	41,804
FARNSWORTH, PATRICIA N	Comparative Study of Aging of the Crystalline Lens	College of Medicine and Dentistry of New Jersey	31,925
FU, S JOSEPH	Progression of Cataractogenesis and Possible Reversal	College of Medicine and Dentistry of New Jersey	52,843
GORTHY, WILLIS C	Morphological and Histochemical Studies of the Lens	Colorado State University	71,476
HANNA, CALVIN	Biochemical Studies on Lens Cataract Formation	University of Arkansas Medical Sciences Campus	25,850
MAKMAN, MAYNARD H	Role of Cyclic AMP in Lens Maturation and Disease	Yeshiva University	39,835
MANSKI, WLADYSLAW J	Immunological Observations on Ocular Lens in Cataract	Columbia University	115,330
MARAK, GEORGE E, JR	Lens-Induced Uveitis and Sympathetic Ophthalmia	Georgetown University	78,108
PATTERSON, JOHN W	Experimental Cataracts	University of Connecticut Health Center	32,081
RAFFERTY, NANCY S	Etiology of Cataract	Northwestern University	28,461
RICHARDS, RICHARD D	Histochemical Changes in Experimental Cataracts	University of Maryland at Baltimore	23,177
SANDERS, DONALD R	A Biochemical Classification for Cataractous Lenses	University of Illinois Medical Center	11,100
SPECTOR, ABRAHAM	Studies of the Effects of Aging on the Ocular Lens	Columbia University	77,048
SWANSON, ARNOLD A	Proteolysis in Normal and Senile Cataract Lens	Medical University of South Carolina	43,985
UNAKAR, NALIN J	Morphological Studies in Experimental Cataracts	Oakland University	42,869
VAN HEYNINGEN, RUTH E	Cataract in Rats Due to Dietary Deficit of Tryptophan	University of Oxford	24,012
Total Active Grants for Subprogram: 22			
Total Grants for Subprogram Receiving FY 76 Funds: 21			
Total Dollars for Subprogram:			1,057,326



Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
C. Diabetic Cataract			
COULTER, JOHN B, III	Measurement of Insulin in Aqueous and Vitreous of Rabbit	Scott and White Memorial Hospital	35,252
LI, LU-KU	Subunit Interactions of Lens Protein	Columbia University	*
PECZON, BENIGNO D	Diabetic, Cataractous and Normal Human Lens Capsules	Eye Research Institute of Retina Foundation	42,402
Total Active Grants for Subprogram: 3		Total Dollars for Subprogram:	77,654
Total Grants for Subprogram Receiving FY 76 Funds: 2			
D. Congenital, Metabolic, and Genetic Cataract			
AZARI, PARVIZ	Biochemical Investigation of a Hereditary Cataract	Colorado State University	51,061
BURNS, ROBERT P	Hereditary Cataract in Peromyscus	University of Oregon Health Sciences Center	28,734
CHASE, HERMAN B	Developmental Genetics of Anophthalmia	Brown University	37,065
ZWAAN, JOHAN J	Development and Growth of the Lens	Albany Medical College	*
Total Active Grants for Subprogram: 4		Total Dollars for Subprogram:	116,860
Total Grants for Subprogram Receiving FY 76 Funds: 3			
E. Cataract Induced by Drugs and Radiation and Occurring Secondary to Other Eye Disorders			
BHUYAN, KAILASH C	Mechanism of Cataractogenesis Caused by Aminotriazole	Eye Bank for Sight Restoration	56,202
CHIPAULT, JACQUES R	Lipids of the Triparanol Cataract	University of Minnesota	41,008
HARRIS, JOHN E	Studies of the Triparanol Cataract	University of Minnesota	39,322
ZIGMAN, SEYMOUR	Near Ultraviolet Light Effects on Ocular Tissues	University of Rochester	74,279
Total Active Grants for Subprogram: 4		Total Dollars for Subprogram:	210,811
Total Grants for Subprogram Receiving FY 76 Funds: 4			
F. Dislocated Lens			
STREETEN, BARBARA W	The Fiber-Gel Structure of the Ocular Zonule	Upstate Medical Center	43,260
Total Active Grants for Subprogram: 1		Total Dollars for Subprogram:	43,260
Total Grants for Subprogram Receiving FY 76 Funds: 1			
G. Accommodation and Optical Problems of Cataract and Aphakia			
Total Active Grants for Program: 70		Total Dollars for Program:	3,139,735 +
Total Grants for Program Receiving FY 76 Funds: 63			

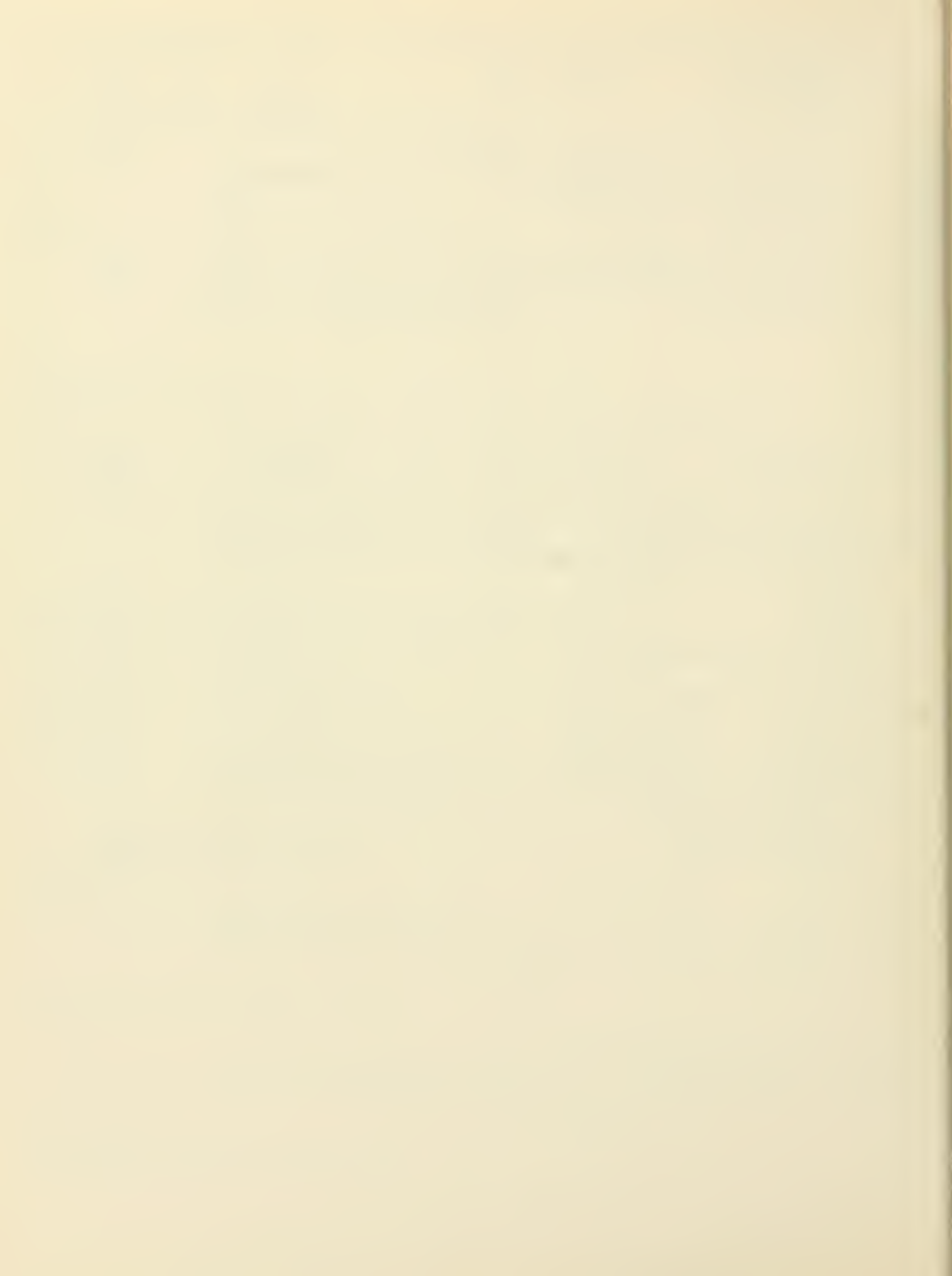
\* Prior year funding

+ 3 grants received an additional \$80,806 in supplemental awards

Principal Investigator Title of Project Institution Department City and State	Contract Number	Entry Number	Current Budget Period Project Period	FY 1976 Total Awarded	Accumulative Awarded to Date
NATIONAL EYE INSTITUTE RESEARCH CONTRACT ACTIVE FY 1976					
BORAKER, DAVID K Development of a Pedigreed Strain of Octodon Degus University of Vermont and State Agricultural College Medical Microbiology Burlington, Vermont	1 N01 EY52105-00	488	10/15/74-10/14/77 10/15/74-10/14/77	*	53,298
Total Active Contracts for Program: 1					
Total Contracts for Program Receiving FY 1976 Funding: 0			Total Dollars for Program:	*	53,298

\*Prior year funding

Principal Investigator Title of Project	Project Number	Entry Number	Current Budget Period Project Period	FY 1976 Funding
NATIONAL EYE INSTITUTE INTRAMURAL RESEARCH PROJECTS ACTIVE FY 1976				
HILLER, RITA Sunlight and Cataract: An Epidemiologic Investigation	Z01 EY00036-02 OBE	489	07/01/75-09/30/76 07/01/75-06/30/76	15,691
KINOSHITA, JIN H Cataracts	Z01 EY00003-04 LVR	490	07/01/75-09/30/76 07/01/75-06/30/76	124,891
KINOSHITA, JIN H Chemistry and Metabolism of the Lens	Z01 EY00136-04 LVR	491	07/01/75-09/30/76 07/01/75-06/30/76	103,942
KOLLARITS, CAROL R Vitreotomy Perfusion Solutions	Z01 EY00019-02 CB	492	07/01/75-09/30/76 07/01/75-06/30/76	4,323
MILTON, ROY C Statistical Support of a Cataract Etiology Study	Z01 EY00165-01 OBE	493	07/01/75-09/30/76 07/01/75-06/30/76	8,880
ZELENKA, PEGGY Plasma Membrane Composition and Biosynthesis in Chick Lens Fibers and Epithelia	Z01 EY00177-01 LVR	494	07/01/75-09/30/76 07/01/75-06/30/76	37,149
Total Projects for Program: 6			Total Dollars for Program:	294,876



## IV. Glaucoma

## Subprograms

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### IV. GLAUCOMA

#### A. Etiology of Glaucoma

1. *Developmental Glaucoma*
2. *Primary Open-Angle Glaucoma*
3. *Primary Angle-Closure Glaucoma*
4. *Secondary Glaucoma*

#### B. Optic Nerve and Vision Changes in Glaucoma

#### C. Hydrodynamics of the Eye

#### D. Medical and Surgical Treatment of Glaucoma



## IV. Glaucoma

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
NATIONAL EYE INSTITUTE RESEARCH PROJECT GRANTS ACTIVE FY 1976 — ALPHABETICAL LISTING							
ANDERSON, DOUGLAS R Experimental Pathology of the Optic Nerve University of Miami Ophthalmology Miami, Florida Etiology	2 R01 EY00031-06	495	06/01/75-10/31/76 06/01/75-10/31/77 B	*			121,971
BARANY, ERNST H Comparative Studies of Glaucoma University of Uppsala Pharmacology Uppsala, Sweden Etiology Treatment	5 R01 EY00231-12	496	04/01/76-03/31/77 04/01/74-03/31/77 A	40,760	0	40,760	122,554
BAXTER, JOHN D Mechanism of Hormone Hyperresponsiveness in Glaucoma University of California, San Francisco Medicine San Francisco, California Etiology	1 R01 EY01785-01	497	05/01/76-04/30/77 05/01/76-04/30/79 A (2)	55,334	14,594	69,928	150,510
BECKER, BERNARD Transport Processes and the Eye Washington University Ophthalmology University City, Missouri Etiology	5 R01 EY00004-22	498	02/01/76-01/31/77 02/01/75-01/31/80 C	115,301	59,658	174,959	471,275
BECKMAN, HUGH Laser Glaucoma Surgery Sinai Hospital of Detroit Eye, Ear, Nose and Throat Detroit, Michigan Treatment	5 R01 EY00886-02	499	01/01/76-12/31/76 04/01/74-12/31/77 D	23,889	12,351	36,240	73,777
BILL, ANDERS A Studies on the Nutrition of the Eye University of Uppsala Pharmacology Uppsala, Sweden Etiology	2 R01 EY00475-10	500	06/30/76-04/30/77 06/30/76-04/30/79 C	43,584	0	43,584	141,884
BITO, LASZLO Z The Control of Tissue-Sensitivity to Autonomic Agents Columbia University Ophthalmology New York, New York Etiology Diagnosis Treatment	2 R01 EY00402-09	501	03/01/76-11/30/76 03/01/76-11/30/78 C	36,397	11,283	47,680	151,389
BITO, LASZLO Z Ocular Fluid Composition and Ocular Tissue Physiology Columbia University Ophthalmology New York, New York Etiology	2 R01 EY00333-10	502	03/01/76-11/30/76 03/01/76-11/30/80 C	56,662	17,565	74,227	342,471
BRUBAKER, RICHARD F Pathology of the Blood-Aqueous Barrier Mayo Foundation Ophthalmology Rochester, Minnesota Etiology Diagnosis Treatment	2 R01 EY00634-06	503	03/01/76-11/30/76 03/01/76-11/30/79 C	49,804	14,915	64,719	210,358

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs
							Recom- mended For Project Period
CASEY, WILLIAM J Application of Experimental Animal Models to Glaucoma University of California, San Francisco San Francisco, California Etiology Treatment	5 R01 EY00418-08	504	06/01/76-05/31/77 06/01/75-05/31/78 A	54,714	18,712	73,426	167,043
CHIOU, C Y Treatment of Glaucoma with Autonomic Drugs University of Florida Gainesville, Florida Etiology Treatment	1 R01 EY01624-01A1	505	05/01/76-04/30/77 05/01/76-04/30/78 D	34,941	11,011	45,952	68,137
COHAN, BRUCE E Contouring the Human Optic Disc University of Michigan Ann Arbor, Michigan Diagnosis	5 R01 EY01076-04	506	05/01/76-04/30/77 05/01/75-04/30/77 B	41,126	35,311	76,437	187,809
DONALDSON, DAVID D Ophthalmic Instrumentation Research Massachusetts Eye and Ear Infirmary Boston, Massachusetts Diagnosis	5 R01 EY00999-03	507	04/01/76-03/31/77 04/01/74-03/31/79 B	62,362	29,405	91,767	249,091
EAKINS, KENNETH E Ocular Effects of Prostaglandins Columbia University New York, New York Etiology	5 R01 EY00457-08	508	04/01/76-03/31/77 04/01/72-03/31/77 C	72,069	22,341	94,410	204,563
ERNEST, J TERRY Factors Affecting Optic Papilla Oxygenation University of Chicago Chicago, Illinois Etiology Treatment	5 R01 EY00792-05	509	01/01/76-12/31/76 01/01/75-12/31/77 B	21,862	7,103	28,965	69,434
FEENEY, LYNETTE Sulfated Glycolipids and Aqueous Humor Secretion University of Oregon Health Sciences Center Ophthalmology Portland, Oregon Etiology Diagnosis	5 R01 EY01638-02	510	06/30/76-06/29/77 06/30/75-06/29/78 C	28,049	10,311	38,360	89,133
FOWLKS, W L Studies of the Blood Vitreous Body Barrier University of Minnesota Minneapolis, Minnesota Etiology	5 R01 EY01258-02	511	06/30/76-06/29/77 06/30/75-06/29/78 C	57,603	18,002	75,605	169,787
FOX, RICHARD R Hereditary Diseases Jackson Laboratory Bar Harbor, Maine Etiology Treatment	5 R01 EY01408-03	512	06/01/76-05/31/77 06/01/74-05/31/77 A	26,176	11,700	37,876	78,150
GRANT, W MORTON Pressure-Regulating Mechanisms in Glaucoma Massachusetts Eye and Ear Infirmary Boston, Massachusetts Etiology Diagnosis Treatment	5 R01 EY00002-24	513	06/30/75-10/31/76 06/30/74-10/31/79 A (2)	*			378,107
GREEN, KEITH Ion and Water Movement in Ocular Tissues Medical College of Georgia Augusta, Georgia Etiology	2 R01 EY01413-03	514	05/01/76-04/30/77 05/01/76-04/30/81 C	45,135	14,891	60,026	191,604

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Serial Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
GREEN, KEITH Role of Drugs on the Components of Aqueous Formation Medical College of Georgia Augusta, Georgia Etiology	1 R01 EY01329-01A1	515	05/01/76-04/30/77 05/01/76-04/30/81 C	63,257	14,412	77,669	223,455
GREGORY, DOUGLAS S Mechanism of Control of Aqueous Humor Formation Yale University New Haven, Connecticut Etiology	1 R01 EY01630-01	516	05/01/76-04/30/77 05/01/76-04/30/79 C	22,608	5,513	28,121	67,851
HAYREH, SOHAN S Ocular Vascular Occlusive Disorders University of Iowa Iowa City, Iowa Etiology	5 R01 EY01576-02	517	06/01/76-05/31/77 06/01/75-05/31/80 B	69,113	25,354	94,467	371,732
HAYREH, SOHAN S Ocular Vascular Occlusive Disorders — Clinical Study University of Iowa Iowa City, Iowa Etiology Diagnosis	5 R01 EY01151-02	518	06/01/76-05/31/77 06/01/75-05/31/80 B	56,108	15,130	71,238	460,910
HENKIND, PAUL Endocrine and Physiological Parameters in Glaucoma Montefiore Hospital and Medical Center Ophthalmology and Neurology New York, New York Etiology Diagnosis Treatment	5 R01 EY01224-03	519	06/30/76-06/29/77 06/30/74-06/29/77 A (2)	127,482	34,051	161,533	362,052
HOLLAND, MONTE G Physiology and Pharmacology of Aqueous Humor Flow Tulane University New Orleans, Louisiana Etiology Treatment	5 R01 EY00207-17	520	09/01/75-08/31/76 09/01/73-08/31/78 C	16,678	10,386	27,064	93,682
HOSKINS, H DUNBAR, JR Congenital Glaucoma: Classification, Etiology, Therapy University of California, San Francisco San Francisco, California Etiology Treatment	1 R01 EY01559-01	521	06/01/76-05/31/77 06/01/76-05/31/81 A (1)	35,806	7,114	42,920	155,654
JOCSON, VICENTE L Congenital Glaucoma: Pathogenesis, Diagnosis, Therapy University of California, San Francisco San Francisco, California Etiology Diagnosis Treatment	5 R01 EY01324-03	522	08/01/75-07/31/76 08/01/73-07/31/76 A (1)	65,908	24,229	90,137	197,326
KASS, MICHAEL A Cyclic Nucleotide Phosphodiesterases and Prostaglandin Washington University University City, Missouri Etiology	5 R01 EY01333-02	523	02/01/76-01/31/77 02/01/75-01/31/78 C	41,918	21,420	63,338	129,890
KRAMER, STEVEN G Intra-Ocular Use of 6-OH-dopamine in Glaucoma Therapy University of California, San Francisco San Francisco, California Etiology Treatment	5 R23 EY01353-02	524	06/01/76-05/31/77 06/01/75-05/31/78 D	3,950	1,009	4,959	11,171
LANGHAM, MAURICE E Adrenergic Physiology of the Eye Johns Hopkins University Baltimore, Maryland Etiology	5 R01 EY01352-03	525	06/30/76-06/29/77 06/30/74-06/29/79 C	59,737	28,674	88,411	234,211

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
LATIES, ALAN M Autonomic Innervation of the Eye University of Pennsylvania Philadelphia, Pennsylvania Etiology Diagnosis	2 R01 EY01194-04	526	10/01/75-11/30/76 10/01/75-11/30/80 C	48,855	20,791	69,646	245,316
LEE, PEI-FEI Collagen Tubes for Aqueous-Venous Shunt Albany Medical College Albany, New York Treatment	5 R01 EY01164-02	527	06/30/76-06/29/77 06/30/75-06/29/78 D	25,500	9,695	35,195	100,331
LEE, PEI-FEI Study of Laser-Based Surgical Procedure for Glaucoma Albany Medical College Albany, New York Treatment	5 R01 EY01047-03	528	04/01/76-07/31/77 04/01/74-03/31/77 D	33,057	15,238	48,295	118,737
LEVENE, RALPH Z Pathogenesis of Primary Open Angle Glaucoma University of Alabama in Birmingham Birmingham, Alabama Etiology	5 R01 EY01536-02	529	08/01/75-07/31/76 08/01/74-07/31/76 A (2)	94,400	25,024	119,424	181,965
LUXENBURG, MALCOLM N Marijuana and Glaucoma Medical College of Georgia Augusta, Georgia Diagnosis Treatment	1 R01 EY01590-01	530	05/01/75-04/30/77 05/01/75-04/30/79 D	*			64,792
MITTAG, THOMAS W Role of ACh in the Cornea and in Ocular Pressure Mount Sinai School of Medicine New York, New York Etiology	5 R01 EY01243-03	531	06/30/76-06/29/77 06/30/74-06/29/77 C	28,554	17,817	46,371	96,972
MOSES, ROBERT A Factors Affecting Intraocular Pressure Washington University University City, Missouri Etiology	5 R01 EY00256-13	532	09/01/75-11/30/76 09/01/71-11/30/76 C	97,076	55,204	152,280	361,300
NEUFELD, ARTHUR H Mediators That Regulate Aqueous Humor Dynamics Yale University New Haven, Connecticut Etiology Diagnosis	5 R01 EY01470-02	533	02/01/76-01/31/77 02/01/75-01/31/78 C	56,820	24,953	81,773	135,840
O'ROURKE, J Uveal Blood Flow and Metabolism University of Connecticut Health Center Farmington, Connecticut Etiology	5 R01 EY00123-06	534	04/01/75-03/31/77 04/01/71-03/31/77 C				180,948
PODOS, STEVEN M In Vivo Inhibitors of Ocular Prostaglandin Synthesis Mount Sinai School of Medicine New York, New York Etiology	5 R01 EY01661-02	535	06/30/76-06/29/77 06/30/75-06/29/78 C	41,686	20,187	61,873	121,269
POLLACK, IRVIN P Experimental and Clinical Studies of Lasers in Glaucoma Johns Hopkins University Baltimore, Maryland Treatment	1 R01 EY01554-01	536	06/04/76-05/31/77 06/04/76-05/31/79 D	86,180	40,886	127,066	187,936



Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
Portney, Gerald L Photogrammetric Quantification of the Optic Cup University of California, Davis Ophthalmology Davis, California Etiology	1 R01 EY01841-01	537	09/30/76-09/29/77 09/30/76-09/29/79 B	54,328	15,755	70,083	173,972
RAVIOLA, GIUSEPPINA E Functional Anatomy of the Anterior Segment of the Eye Boston University Anatomy Boston, Massachusetts Etiology	5 R01 EY01349-02	538	06/01/76-05/31/77 06/01/74-05/31/79 C	38,770	13,467	52,237	189,932
ROSENTHAL, A RALPH Computer Mapping of the Optic Nerve Head Stanford University Surgery Stanford, California Diagnosis Treatment	5 R01 EY01248-03	539	02/01/76-01/31/77 02/01/74-01/31/77 B	22,083	12,366	34,449	71,417
SARGENT, ROGER G A Study on Physical Fitness and Intraocular Pressure University of South Carolina Columbia, South Carolina Treatment	1 R01 EY01629-01A1	540	06/01/76-05/31/77 06/01/76-05/31/77 C	10,227	3,106	13,333	10,227
SCHWARTZ, BERNARD Changes in the Optic Disc in Patients with Glaucoma New England Medical Center Hospital Ophthalmology Boston, Massachusetts Diagnosis	5 R01 EY00936-03	541	04/01/76-03/31/77 04/01/74-03/31/77 B	57,799	15,574	73,373	243,605
SCHWARTZ, BERNARD Response of Ocular Pressure to Corticosteroids New England Medical Center Hospital Ophthalmology Boston, Massachusetts Etiology Diagnosis	5 R01 EY00024-08	542	05/01/76-04/30/77 05/01/75-04/30/78 A (2)	70,208	14,741	84,949	223,757
SCOTT, WALTER N Ocular Carbonic Anhydrase Mount Sinai School of Medicine Ophthalmology New York, New York Etiology Treatment	5 R01 EY00718-05	543	06/01/76-11/30/77 06/01/74-11/30/77 C	57,368	36,769	94,137	160,530
SEARS, MARVIN L Physiologic Studies of Intraocular Pressure Yale University Ophthalmology and Visual Sciences New Haven, Connecticut Etiology Treatment	5 R01 EY00237-15	544	01/01/76-12/31/76 01/01/72-12/31/76 C	93,570	50,195	143,765	376,988
SHAPIRO, JERROLD M Laser Contour Angiography in Experimental Glaucoma Boston University Ophthalmology Boston, Massachusetts Etiology	1 R01 EY01788-01	545	05/01/76-04/30/77 05/01/76-04/30/78 B	82,873	21,136	104,009	137,753
SOUTHREN, A LOUIS Cortisol Metabolism in Glaucoma and Cataract New York Medical College Medicine New York, New York Etiology Treatment	2 R01 EY01313-02	546	05/01/76-04/30/77 05/01/76-04/30/79 A (2)	62,730	20,639	83,369	207,496
SPAETH, GEORGE L The Pathogenesis of Visual Loss in Glaucoma Wills Eye Hospital Ophthalmology Philadelphia, Pennsylvania Etiology Diagnosis	5 R01 EY00677-05	547	06/01/76-05/31/77 06/01/75-05/31/77 B	59,397	18,754	78,151	116,351



Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
TROTTER, ROBERT R Adrenergic and Cholinergic Interactions in the Eye West Virginia University Surgery Morgantown, West Virginia Etiology Treatment	5 R01 EY01217-03	548	02/01/76-01/31/77 02/15/74-01/31/77 C	34,912	9,238	44,150	108,359
VAN BUSKIRK, E MICHAEL The Vertebrate Eye: Studies of Aqueous Outflow Pennsylvania State University, Hershey Medical Center Surgery Hershey, Pennsylvania Etiology	5 R01 EY01563-02	549	05/01/76-04/30/77 05/01/75-04/30/78 C	35,696	14,255	49,951	84,442
WAITZMAN, MORTON B Metabolic Systems in Aqueous Humor Dynamics Emory University Ophthalmology Atlanta, Georgia Etiology Treatment	5 R01 EY00243-13	550	06/30/76-06/29/77 06/30/74-06/29/77 C	36,741	16,772	53,513	113,097
WALTMAN, STEPHEN R Studies in Glaucoma and Related Diseases Washington University Ophthalmology University City, Missouri Etiology Diagnosis	2 R01 EY01167-04	551	05/01/76-04/30/77 05/01/76-04/30/79 A (2)	62,715	28,420	91,135	184,699
WILLIAMSON, ARTHUR E, JR Noninvasive Intraocular Pressure Monitoring System Southern Research Institute Engineering and Applied Sciences Birmingham, Alabama Etiology Diagnosis	5 R01 EY01478-02	552	06/01/76-05/31/77 06/01/75-05/31/77 C	12,953	21,027	33,980	32,941
WOODS, WENDELL D Biochemical Regulation in Ocular Tissues Emory University Ophthalmology Atlanta, Georgia Etiology	5 R01 EY00945-05	553	05/01/76-04/30/77 05/01/72-04/30/77 C	55,592	22,023	77,615	180,894
WYMAN, MILTON Congenital Glaucoma: A Developmental Study Ohio State University Veterinary Clinical Sciences Columbus, Ohio Etiology Diagnosis	5 R01 EY01184-03	554	11/01/75-10/31/76 11/01/73-10/31/77 A (1)	57,214	13,832	71,046	183,284
YOUNG, FRANCIS A Growth Environmental Refractive Changes Washington State University Psychology Pullman, Washington Etiology Diagnosis	5 R01 EY00284-11	555	04/01/76-03/31/77 04/01/74-03/31/77 A (3)	55,769	19,770	75,539	175,221
Total Active Grants for Program: 61			Total Dollars				
Total Grants for Programs Receiving FY 1976 Funds: 56			for Program:	2,847,078	1,078,324	3,925,402 + 10,543,380	

\*Prior year funding

+9 grants received an additional \$205,611 in supplemental awards

Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
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## NATIONAL EYE INSTITUTE RESEARCH PROJECT GRANTS ACTIVE FY 1976 — SUBPROGRAM LISTING

## A. Etiology of Glaucoma

BARÁNY, ERNST H	Comparative Studies of Glaucoma	University of Uppsala	40,760
CASEY, WILLIAM J	Application of Experimental Animal Models to Glaucoma	University of California, San Francisco	73,426
FOX, RICHARD R	Hereditary Diseases	Jackson Laboratory	37,876
Total Active Grants for Area: 3			
Total Grants for Area Receiving FY 76 Funds: 3		Total Dollars for Area:	152,062

## 1. Developmental Glaucoma

HOSKINS, H DUNBAR, JR	Congenital Glaucoma: Classification, Etiology, Therapy	University of California, San Francisco	42,920
JOCSON, VICENTE L	Congenital Glaucoma: Pathogenesis, Diagnosis, Therapy	University of California, San Francisco	90,137
WYMAN, MILTON	Congenital Glaucoma: A Developmental Study	Ohio State University	71,046
Total Active Grants for Area: 3			
Total Grants for Area Receiving FY 76 Funds: 3		Total Dollars for Area:	204,103

## 2. Primary Open-Angle Glaucoma

BAXTER, JOHN D	Mechanism of Hormone Hyperresponsiveness in Glaucoma	University of California, San Francisco	69,928
GRANT, W MORTON	Pressure-Regulating Mechanisms in Glaucoma	Massachusetts Eye and Ear Infirmary	*
HENKIND, PAUL	Endocrine and Physiological Parameters in Glaucoma	Montefiore Hospital and Medical Center	161,533
LEVENE, RALPH Z	Pathogenesis of Primary Open Angle Glaucoma	University of Alabama in Birmingham	119,424
SCHWARTZ, BERNARD	Response of Ocular Pressure to Corticosteroids	New England Medical Center Hospital	84,949
SOUTHREN, A LOUIS	Cortisol Metabolism in Glaucoma and Cataract	New York Medical College	83,369
WALTMAN, STEPHEN R	Studies in Glaucoma and Related Diseases	Washington University	91,135
Total Active Grants for Area: 7			
Total Grants for Area Receiving FY 76 Funds: 6		Total Dollars for Area:	610,338

## 3. Primary Angle-Closure Glaucoma

## 4. Secondary Glaucomas

YOUNG, FRANCIS A	Growth Environmental Refractive Changes	Washington State University	75,539
Total Active Grants for Area: 1			
Total Grants for Area Receiving FY 76 Funds: 1		Total Dollars for Area:	75,539
Total Active Grants for Subprogram: 14			
Total Grants for Subprogram Receiving FY 76 Funds: 13		Total Dollars for Subprogram:	1,042,042

Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
<b>B. Optic Nerve and Vision Changes in Glaucoma</b>			
ANDERSON, DOUGLAS R	Experimental Pathology of the Optic Nerve	University of Miami	*
COHAN, BRUCE E	Contouring the Human Optic Disc	University of Michigan	76,437
DONALDSON, DAVID D	Ophthalmic Instrumentation Research	Massachusetts Eye and Ear Infirmary	91,767
ERNEST, J TERRY	Factors Affecting Optic Papilla Oxygenation	University of Chicago	28,965
HAYREH, SOHAN S	Ocular Vascular Occlusive Disorders	University of Iowa	94,467
HAYREH, SOHAN S	Ocular Vascular Occlusive Disorders — Clinical Study	University of Iowa	71,238
Portney, Gerald L	Photogrammetric Quantification of the Optic Cup	University of California, Davis	70,083
ROSENTHAL, A RALPH	Computer Mapping of the Optic Nerve Head	Stanford University	34,449
SCHWARTZ, BERNARD	Changes in the Optic Disc in Patients with Glaucoma	New England Medical Center Hospital	73,373
SHAPIRO, JERROLD M	Laser Contour Angiography in Experimental Glaucoma	Boston University	104,009
SPAETH, GEORGE L	The Pathogenesis of Visual Loss in Glaucoma	Wills Eye Hospital	78,151
Total Active Grants for Subprogram: 11			
Total Grants for Subprogram Receiving FY 76 Funds: 9			
Total Dollars for Subprogram:			652,856

**C. Hydrodynamics of the Eye**

BECKER, BERNARD	Transport Processes and the Eye	Washington University	174,959
BILL, ANDERS A	Studies on the Nutrition of the Eye	University of Uppsala	43,584
BITO, LASZLO Z	The Control of Tissue-Sensitivity to Autonomic Agents	Columbia University	47,680
BITO, LASZLO Z	Ocular Fluid Composition and Ocular Tissue Physiology	Columbia University	74,227
BRUBAKER, RICHARD F	Pathology of the Blood-Aqueous Barrier	Mayo Foundation	64,719
EAKINS, KENNETH E	Ocular Effects of Prostaglandins	Columbia University	94,410
FEENEY, LYNETTE	Sulfated Glycolipids and Aqueous Humor Secretion	University of Oregon Health Sciences Center	38,360
FOWLKS, W L	Studies of the Blood Vitreous Body Barrier	University of Minnesota	75,605
GREEN, KEITH	Role of Drugs on the Components of Aqueous Formation	Medical College of Georgia	77,669
GREEN, KEITH	Ion and Water Movement in Ocular Tissues	Medical College of Georgia	60,026
GREGORY, DOUGLAS S	Mechanism of Control of Aqueous Humor Formation	Yale University	28,121
HOLLAND, MONTE G	Physiology and Pharmacology of Aqueous Humor Flow	Tulane University	27,064
KASS, MICHAEL A	Cyclic Nucleotide Phosphodiesterases and Prostaglandin	Washington University	63,338
LANGHAM, MAURICE E	Adrenergic Physiology of the Eye	Johns Hopkins University	88,411
LATIES, ALAN M	Autonomic Innervation of the Eye	University of Pennsylvania	69,646

Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
MITTAG, THOMAS W	Role of ACh in the Cornea and in Ocular Pressure	Mount Sinai School of Medicine	46,371
MOSES, ROBERT A	Factors Affecting Intraocular Pressure	Washington University	152,280
NEUFELD, ARTHUR H	Mediators That Regulate Aqueous Humor Dynamics	Yale University	81,773
O'ROURKE, J	Uveal Blood Flow and Metabolism	University of Connecticut Health Center	*
PODOS, STEVEN M	In Vivo Inhibitors of Ocular Prostaglandin Synthesis	Mount Sinai School of Medicine	61,873
RAVIOLA, GIUSEPPINA E	Functional Anatomy of the Anterior Segment of the Eye	Boston University	52,237
SARGENT, ROGER G	A Study on Physical Fitness and Intraocular Pressure	University of South Carolina	13,333
SCOTT, WALTER N	Ocular Carbonic Anhydrase	Mount Sinai School of Medicine	94,137
SEARS, MARVIN L	Physiologic Studies of Intraocular Pressure	Yale University	143,765
TROTTER, ROBERT R	Adrenergic and Cholinergic Interactions in the Eye	West Virginia University	44,150
VAN BUSKIRK, E MICHAEL	The Vertebrate Eye: Studies of Aqueous Outflow	Pennsylvania State University Hershey Medical Center	49,951
WAITZMAN, MORTON B	Metabolic Systems in Aqueous Humor Dynamics	Emory University	53,513
WILLIAMSON, ARTHUR E, JR	Noninvasive Intraocular Pressure Monitoring System	Southern Research Institute	33,980
WOODS, WENDELL D	Biochemical Regulation in Ocular Tissues	Emory University	77,615
Total Active Grants for Subprogram: 29			
Total Grants for Subprogram Receiving FY 76 Funds: 28		Total Dollars for Subprogram:	1,932,797

**D. Medical and Surgical Treatment of Glaucoma**

BECKMAN, HUGH	Laser Glaucoma Surgery	Sinai Hospital of Detroit	36,240
CHIOU, C Y	Treatment of Glaucoma with Autonomic Drugs	University of Florida	45,952
KRAMER, STEVEN G	Intra-Ocular Use of 6-OH-dopamine in Glaucoma Therapy	University of California, San Francisco	4,959
LEE, PEI-FEI	Study of Laser-Based Surgical Procedure for Glaucoma	Albany Medical College	48,295
LEE, PEI-FEI	Collagen Tubes for Aqueous-Venous Shunt	Albany Medical College	35,195
LUXENBURG, MALCOLM N	Marijuana and Glaucoma	Medical College of Georgia	*
POLLACK, IRVIN P	Experimental and Clinical Studies of Lasers in Glaucoma	Johns Hopkins University	127,066
Total Active Grants for Subprogram: 7			
Total Grants for Subprogram Receiving FY 76 Funds: 6		Total Dollars for Subprogram:	297,707
Total Active Grants for Program: 61			
Total Grants for Program Receiving FY 76 Funds: 56		Total Dollars for Program:	3,925,402 +

\*Prior year funding

+ 9 grants received an additional \$205,611 in supplemental awards

Principal Investigator Title of Project Institution Department City and State	Grant Number	Entry Number	Current Budget Period Project Period	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
NATIONAL EYE INSTITUTE SPECIALIZED CLINICAL RESEARCH CENTER GRANT ACTIVE FY 1976							
BECKER, BERNARD Glaucoma Clinical Research Center Washington University Ophthalmology University City, Missouri	5 P50 EY00336-10	556	06/01/76-05/31/77 06/01/74-05/31/79	295,103	152,635	447,738	1,498,176
Total Grants for Program Receiving FY 1976 Funds: 1 Total Dollars for Program:				295,103	152,635	447,738	1,498,176

Principal Investigator Title of Project Institution Department City and State	Contract Number	Entry Number	Current Budget Period Project Period	FY 1976 Total Awarded	Accum- ulative Awarded to Date
NATIONAL EYE INSTITUTE RESEARCH CONTRACTS ACTIVE FY 1976					
ARMALY, MANSOUR Study of Outflow Resistance George Washington University Ophthalmology Washington, District of Columbia	1 N01 EY22114-00	557	06/30/72-06/29/77 06/30/72-06/29/77	*	479,796
ARMALY, MANSOUR F Biostatistical Analysis of Collaborative Glaucoma Study George Washington University Ophthalmology Washington, District of Columbia	2 N01 EY42167-02	558	06/19/74-09/30/76 06/17/74-09/30/76	97,527	192,008
COUVILLON, L A Measurement of Intraocular Pressure University of Utah Salt Lake City, Utah	2 N01 EY32115-07	559	06/16/75-08/31/76 06/01/73-08/31/76	*	137,384
Total Active Contracts of Program: 3				*	
Total Contracts for Program Receiving FY 1976 Funding: 1				Total Dollars for Program: 97,527	809,188

\*Prior year funding

Principal Investigator Title of Project	Project Number	Entry Number	Current Budget Period Project Period	FY 1976 Funding
NATIONAL EYE INSTITUTE INTRAMURAL RESEARCH PROJECTS ACTIVE FY 1976				
BALLINTINE, ELMER J Tissue Culture of Trabecular Meshwork	Z01 EY00017-02 CB	560	07/01/75-09/30/76 07/01/75-06/30/76	3,071
BALLINTINE, ELMER J Ocular Hypertension Study	Z01 EY00150-03 CB	561	07/01/75-09/30/76 07/01/75-06/30/76	34,901



Principal Investigator Title of Project	Project Number	Entry Number	Current Budget Period Project Period	FY 1976 Funding
BALLINTINE, ELMER J Aqueous Humor Formation in Monkey	Z01 EY00151-03 CB	562	07/01/75-09/30/76 07/01/75-06/30/76	25,239
BERGSMAN, DONALD R Studies of Ophthalmic Familial and Genetic Diseases	Z01 EY00039-04 CB	563	07/01/75-09/30/76 07/01/75-06/30/76	9,060
GAASTERLAND, DOUGLAS E Experimental Glaucoma in the Rhesus Monkey	Z01 EY000154-03 CB	564	07/01/75-09/30/76 07/01/75-06/30/76	25,028
GAASTERLAND, DOUGLAS E Laser Surgery for Glaucoma	Z01 EY00168-01 CB	565	07/01/75-09/30/76 07/01/75-06/30/76	30,454
KAISER-KUPFER, MURIEL Pigmentary Dispersion With and Without Glaucoma	Z01 EY00011-02 CB	566	07/01/75-09/30/76 07/01/75-06/30/76	14,596
MACRI, FRANK J Study of Pharmacodynamics of Various Agents Affecting the Intraocular Pressure	Z01 EY00013-05 CB	567	07/01/75-09/30/76 07/01/75-06/30/76	46,701
Total Projects for Program: 8		Total Dollars for Program:		189,050



## V. Sensory and Motor Disorders of Vision

## Subprograms

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### V. SENSORY AND MOTOR DISORDERS OF VISION

- A. Congenital, Developmental, and Degenerative Abnormalities
- B. Strabismus and Other Oculomotor Disorders
  - 1. *Strabismus*
  - 2. *Oculomotor Control*
- C. Optical and Pupillary Disorders
- D. Visual Sensory and Perceptual Disorders
  - 1. *Neural Mechanisms*
  - 2. *Psychophysical Functions*
  - 3. *Electrophysiological Techniques Applicable to Man*
- E. Sensory and Motor Disorders Related to Specific Disease Processes
  - 1. *Vascular and Circulatory Abnormalities*
  - 2. *Inflammatory Diseases*
  - 3. *Metabolic, Toxic, and Traumatic Disorders*
  - 4. *Tumors*
- F. Rehabilitation

## V. Sensory and Motor Disorders of Vision

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
NATIONAL EYE INSTITUTE RESEARCH PROJECT GRANTS ACTIVE FY 1976 — ALPHABETICAL LISTING							
AREES, EDWARD A Development of Optic Pathway During Embryogenesis Massachusetts General Hospital Boston, Massachusetts Etiology	5 R01 EY01287-03	568	06/01/76-05/31/77 06/01/74-05/31/77 A	41,353	15,675	57,028	115,973
AREND, LAWRENCE E Analysis of Frequency Channels in Human Vision Brandeis University Waltham, Massachusetts Etiology	1 R01 EY01797-01	569	06/30/76-06/29/77 06/30/76-06/29/79 D (2)	27,686	10,339	38,025	68,479
ARMINGTON, JOHN C Stimulus Alternation and Visual Potentials Northeastern University Boston, Massachusetts Etiology Diagnosis	5 R01 EY00589-09	570	05/01/76-04/30/77 05/01/73-04/30/78 D (3)	38,252	16,440	54,692	160,144
BACH-Y-RITA, PAUL Peripheral Neurophysiology of Eye Movements Institutes of Medical Sciences Smith-Kettlewell Institute of Visual Science San Francisco, California Etiology Diagnosis	1 R01 EY01474-01A1	571	06/01/75-11/30/76 06/01/75-11/30/78 B (2)	*			279,044
BAKER, FRANK H Thalamic Mechanisms in Visual Processing Johns Hopkins University Baltimore, Maryland Etiology	1 R01 EY01494-01A1	572	06/30/76-06/29/77 06/30/76-06/29/79 D (1)	25,981	10,411	36,392	76,709
BAKER, ROBERT G Eye Movement: Physiological Organization University of Iowa Iowa City, Iowa Etiology	5 R01 EY01074-03	573	06/01/75-09/30/76 06/01/73-09/30/76 B (2)	*			66,333
Baker, Robert G Eye Movement: Physiological Organization New York University New York, New York Etiology	1 R01 EY02007-01	574	09/30/76-09/29/77 09/30/76-09/29/81 B (2)	39,260	11,454	50,714	146,910
BARLOW, ROBERT B, JR Functional Organization of the Visual System Syracuse University Syracuse, New York Etiology	5 R01 EY00667-05	575	05/01/76-04/30/77 05/01/74-04/30/77 D (1)	56,181	31,696	87,877	152,111
BARMACK, NEAL H The Peripheral Components of Eye Movement Control Good Samaritan Hospital and Medical Center Laboratory of Neurophysiology Portland, Oregon Etiology Diagnosis	5 R01 EY00848-05	576	01/01/76-12/31/76 01/01/75-12/31/77 B (2)	44,460	21,218	65,678	137,425



Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
BERKLEY, MARK A Orientation — Selective Mechanisms of Vision Florida State University Psychology Tallahassee, Florida Etiology Diagnosis	5 R01 EY00953-05	577	06/01/76-05/31/77 06/01/75-05/31/78 D (2)	29,979	10,453	40,432	89,493
BERNARD, GARY D Optical Information Processing in Eyes Yale University Ophthalmology and Visual Sciences New Haven, Connecticut Etiology	5 R01 EY01140-03	578	05/01/75-07/31/76 05/01/73-07/31/76 D (1)	*			59,962
BERNARD, GARY D Optical Information Processing in Eyes Yale University Ophthalmology and Visual Sciences New Haven, Connecticut Etiology	2 R01 EY01140-04	579	06/01/76-04/30/77 06/01/76-04/30/80 D (1)	67,562	23,833	91,395	197,440
BIERSDORF, WILLIAM R Electrophysiological Studies of Visual Adaptation Ohio State University Ophthalmology Columbus, Ohio Etiology Diagnosis	5 R01 EY00454-07	580	06/01/75-11/30/76 06/01/72-11/30/76 D (3)	*			106,557
BISHOP, LEWIS G Neurophysiology of an Optomotor Response University of Southern California Biological Sciences Los Angeles, California Etiology	5 R01 EY01513-02	581	06/30/76-06/29/77 06/30/75-06/29/78 D (1)	35,035	13,146	48,181	132,304
Blake, Randolph Psychophysical Studies of Spatial Vision Northwestern University Psychology Evanston, Illinois Etiology Diagnosis	1 R01 EY01596-01	582	09/30/76-09/29/77 09/30/76-09/29/78 D (2)	4,732	1,990	6,722	8,883
BOYNTON, ROBERT M Psychophysiological and Optical Studies in Vision University of California, San Diego Psychology La Jolla, California Etiology Diagnosis	5 R01 EY01541-02	583	06/01/75-07/31/76 10/01/74-07/31/76 D (1)	*			92,756
BREININ, GOODWIN M Fine Structure of Normal and Pathologic Ocular Muscle New York University Ophthalmology New York, New York Etiology Diagnosis	5 R01 EY00309-11	584	05/01/76-04/30/77 05/01/75-04/30/80 B (2)	83,411	35,794	119,205	376,090
BRIDGEMAN, BRUCE Temporal Coding and Processing in Monkey Visual Cortex University of California, Santa Cruz Psychology Santa Cruz, California Etiology Diagnosis	5 R01 EY01482-02	585	06/01/76-05/31/77 06/01/75-05/31/78 D (2)	22,605	6,705	29,310	68,267
BROOKS, BARBARA A Visual Processing During Eye Movement University of Texas Health Science Center Physiology San Antonio, Texas Etiology	2 R01 EY01497-03	586	06/30/76-06/29/77 06/30/76-06/29/79 D (1)	46,078	21,000	67,078	101,262
BROWN, JOHN L Vision: Spatial, Temporal and Adapting Effects University of Rochester Center for Visual Science Rochester, New York Etiology	5 R01 EY00680-04	587	01/01/75-09/30/76 01/01/72-09/30/76 D (2)	*			152,602

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Serial Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs
							Recom- mended For Project Period
CAFFERATA, ROBERT L The Expression of Neuronal Specificity University of Rochester Biology Rochester, New York Etiology	5 R01 EY01529-02	588	02/01/76-01/31/77 02/01/75-01/31/78 A	32,125	17,348	49,473	110,544
CARLSON, STANLEY D Neuropile Reconstruction by HVEM and Other Methods University of Wisconsin, Madison Entomology Madison, Wisconsin Etiology	1 R01 EY01686-01	589	06/01/76-05/31/77 06/01/76-05/31/79 D (1)	27,888	10,783	38,671	85,381
CASAGRANDE, VIVIEN A Effects of Visual Deprivation in Primates Vanderbilt University Anatomy Nashville, Tennessee Etiology	1 R01 EY01778-01	590	05/01/76-04/30/77 05/01/76-04/30/79 A	52,439	14,761	67,200	144,619
CHAPMAN, ROBERT M Visual Mechanisms for Wavelength Discrimination University of Rochester Center for Visual Science Rochester, New York Etiology Diagnosis	5 R01 EY01593-02	591	02/01/76-01/31/77 02/01/75-01/31/78 D (2)	34,200	18,468	52,668	102,917
CHIARANDINI, DANTE J Physiology and Pharmacology of Extraocular Muscles New York University Ophthalmology New York, New York Etiology	5 R01 EY01297-03	592	06/01/76-05/31/77 06/01/74-05/31/77 B (2)	37,106	16,503	53,609	108,291
CHINO, YUZO M Stereopsis in the Common and Siamese Cat Illinois College of Optometry Division of Visual Science Chicago, Illinois Etiology Diagnosis	5 R01 EY01444-02	593	06/30/76-06/29/77 06/30/75-06/29/78 D (2)	16,945	0	16,945	59,364
CHOW, KAO L Neurology of Vision and Learning Stanford University Neurology Stanford, California Etiology	2 R01 EY00691-16	594	04/01/76-03/31/77 04/01/76-03/31/81 A	43,863	22,282	66,145	195,580
COGAN, ALEXANDER I Interocular Suppression in Strabismus Institutes of Medical Sciences Smith-Kettlewell Institute of Visual Science San Francisco, California Etiology Diagnosis	1 R01 EY01558-01A1	595	05/01/76-04/30/77 05/01/76-04/30/79 B (1)	37,855	12,612	50,467	115,557
COHEN, GERALD H Pupil Response as an Index for Chromatic Mechanisms University of Rochester Psychology Rochester, New York Etiology Diagnosis	5 R01 EY01234-02	596	06/01/76-05/31/77 06/01/75-05/31/78 C	27,000	14,580	41,580	84,646
COHN, THEODORE E The Detection of Visual Signals University of California, Berkeley Physiological Optics Berkeley, California Etiology Diagnosis	5 R23 EY01481-02	597	06/30/76-06/29/77 06/30/75-06/29/78 D (2)	7,452	2,343	9,795	22,386
COLLINS, CARTER C Human Oculomotor Motility Institutes of Medical Sciences Smith-Kettlewell Institute of Visual Science San Francisco, California Etiology Diagnosis	1 R01 EY01719-01	598	05/01/76-04/30/77 05/01/76-04/30/79 B (2)	54,395	19,870	74,265	182,207

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
COLLINS, CARTER C Portable Seeing Aid Institutes of Medical Sciences Smith-Ketterwell Institute of Visual Science San Francisco, California Treatment	5 R01 EY00686-05	599	05/01/76-04/30/77 05/01/74-04/30/79 F	58,590	20,907	79,497	232,519
COOL, STEVEN J Correlates of Binocular Visual Stimulation University of Texas Health Science Center Sensory Sciences Center Houston, Texas Etiology	5 R01 EY00907-02	600	04/01/75-12/31/76 04/01/74-12/31/76 D (1)	*			22,150
CORWIN, THOMAS R Surround Fields and Temporal Brightness Enhancement Northeastern University Psychology Boston, Massachusetts Etiology Diagnosis	1 R01 EY01570-01	601	06/01/75-08/31/76 06/01/75-08/31/76 D (2)	*			58,645
COWAN, W MAXWELL Quantitative Anatomical Studies of Visual Deprivation Washington University Anatomy and Neurobiology University City, Missouri Etiology	5 R01 EY01255-02	602	12/01/75-11/30/76 06/01/74-11/30/78 A	60,596	30,394	90,990	225,877
CRANE, HEWITT D Experimental Study of Visual Accommodation Stanford Research Institute Bioengineering Group Menlo Park, California Etiology Diagnosis	5 R01 EY01031-03	603	04/01/76-03/31/77 04/01/74-03/31/77 D (2)	44,602	51,012	95,614	164,496
CROSSLAND, WILLIAM J Development and Maintenance of Visual Connections Wayne State University Anatomy Detroit, Michigan Etiology	1 R01 EY01796-01	604	06/01/76-05/31/77 06/01/76-05/31/79 D (1)	28,090	0	28,090	71,685
DAVIDSON, PHILIP W Rehabilitation of Haptic Perception in the Blind University of Rochester Psychiatry Rochester, New York Treatment	1 R01 EY01790-01	605	05/01/76-04/30/77 05/01/76-04/30/79 F	24,025	9,073	33,098	69,838
DAW, NIGEL W Neural Mechanisms of Vision Washington University Physiology and Biophysics University City, Missouri Etiology	2 R01 EY00053-07	606	03/01/76-02/28/77 03/01/76-02/28/81 A	34,794	15,481	50,275	168,925
DE VALOIS, RUSSELL L Electrophysiology of Color Vision University of California, Berkeley Psychology Berkeley, California Etiology	5 R01 EY00014-08	607	09/01/75-08/31/76 09/01/74-08/31/79 D (1)	48,926	15,536	64,462	204,235
DRUM, BRUCE A Roles of Tonic and Phasic Neural Systems in Vision George Washington University Ophthalmology Washington, District of Columbia Etiology Diagnosis	5 R01 EY01672-02	608	06/01/76-05/31/77 06/01/75-05/31/78 D (2)	31,967	13,198	45,165	115,627
DUBIN, MARK W Visual Receptive-Field Organization and Development University of Colorado Molecular, Cellular and Developmental Biology Boulder, Colorado Etiology	2 R01 EY00998-03	609	09/01/74-03/31/76 09/01/74-03/31/76 D (1)	*			104,455

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
DUFFY, FRANK H The Role of Inhibition in Experimental Amblyopia Children's Hospital Medical Center Boston, Massachusetts Etiology	1 R01 EY01901-01	610	09/30/76-09/29/77 09/30/76-09/29/79 A	65,948	29,261	95,209	227,214
EBBESSON, SVEN O Organization of the Vertebrate Visual System University of Virginia Charlottesville, Virginia Etiology	5 R01 EY00154-06	611	06/30/76-11/30/76 06/30/74-11/30/76 D (1)	56,191	30,660	86,851	116,021
EMERSON, ROBERT C Image Movement: Neural Processing Mechanisms University of Rochester Rochester, New York Etiology	5 R01 EY01440-02	612	09/01/75-08/31/76 09/01/74-08/31/79 D (1)	25,442	14,251	39,693	123,255
ENROTH-CUGELL, CHRISTINA A Retinal Ganglion Cell Responses to Time-Varying Stimuli Northwestern University Evanston, Illinois Etiology	5 R01 EY00206-15	613	09/01/75-08/31/76 06/01/72-08/31/77 D (1)	39,580	17,205	56,785	180,646
FAHRENBACH, WOLF H Organization of Visual Centers in the Limulus Brain Medical Research Foundation of Oregon Electron Microscopy Portland, Oregon Etiology	5 R01 EY00392-09	614	05/01/76-04/30/77 05/01/74-04/30/79 D (1)	16,649	5,977	22,626	66,447
FIFKOVA, EVA Visual Deprivation and Synapses of Visual Centers University of Colorado Boulder, Colorado Etiology Diagnosis	5 R01 EY01500-02	615	02/01/76-01/31/77 02/01/75-01/31/79 A	29,433	10,596	40,029	104,495
FOX, ROBERT The Suppression Mechanism in Binocular Rivalry Vanderbilt University Nashville, Tennessee Etiology	5 R01 EY00590-13	616	06/01/76-05/31/77 06/01/75-05/31/78 D (2)	29,165	13,607	42,772	82,392
FOX, ROBERT Stereoscopic Vision in Animals Vanderbilt University Nashville, Tennessee Etiology	2 R01 EY00931-04	617	06/30/76-06/29/77 06/30/76-06/29/77 D (2)	14,217	6,568	20,785	14,217
FREEMAN, JOHN A Synaptic Organization of the Optic Tectum Vanderbilt University Nashville, Tennessee Etiology	2 R01 EY01117-04	618	03/01/76-02/28/77 03/01/76-02/28/79 D (1)	28,720	9,444	38,164	138,941
FREEMAN, RALPH D Visual Cortex: Single-Unit Studies of Plasticity University of California, Berkeley Berkeley, California Etiology	5 R01 EY01175-03	619	05/01/75-12/31/76 05/01/73-12/31/76 D (2)	*			96,654
FUCHS, ALBERT F Neurophysiological Studies of the Oculomotor System University of Washington Seattle, Washington Etiology	5 R01 EY00745-05	620	09/01/75-08/31/76 09/01/71-08/31/76 B (2)	28,363	4,521	32,884	121,198



Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs
							Recom- mended For Project Period
GANZ, LEO Neuropsychology Stanford University Stanford, California Etiology	5 R01 EY01241-03	621	05/01/76-04/30/77 05/01/74-04/30/77 D (1)	20,219	12,231	32,450	82,198
GEORGE, STEPHEN A Vision in Triploid Animals Amherst College Amherst, Massachusetts Etiology	5 R01 EY01662-02	622	06/30/76-06/29/77 06/30/75-06/29/77 A	8,680	4,128	12,808	15,876
GESTRIN, PHYLLIS J Neural Control of Eye Movements University of Texas, Austin Austin, Texas Etiology	5 R01 EY01506-02	623	06/01/76-05/31/77 06/01/75-05/31/78 B (2)	35,249	13,908	49,157	159,294
GIOLLI, ROLAND A Visual and Non-Visual Cortical Efferents University of California, Irvine Irvine, California Etiology	5 R01 EY00607-10	624	05/01/76-04/30/77 05/01/74-04/30/77 D (1)	11,980	4,097	16,077	32,859
GOLDBERG, STEPHEN J Inputs to Abducens Neurons: An Intracellular Study Virginia Commonwealth University Richmond, Virginia Etiology	5 R23 EY01442-02	625	06/30/76-06/29/77 06/30/75-06/29/78 D (1)	7,500	2,171	9,671	22,500
GOLDSTEIN, E BRUCE Visual Adaptation: Peripheral and Central Mechanisms University of Pittsburgh Pittsburgh, Pennsylvania Etiology Diagnosis	5 R01 EY00135-05	626	06/30/76-06/29/77 06/30/75-06/29/78 D (2)	26,275	12,017	38,292	86,358
GOLDSTEIN, E BRUCE Velocity Preference of Neurons in Cat's LGN and Retina University of Pittsburgh Pittsburgh, Pennsylvania Etiology	1 R01 EY01642-01	627	05/01/76-04/30/77 05/01/76-04/30/79 D (2)	19,293	6,645	25,938	55,556
GOLLENDER, MORTON Development Studies of Stereoscopic Vision Oregon Optometric Center Portland, Oregon Etiology Treatment	5 R01 EY01498-02	628	06/01/75-05/31/77 06/30/74-05/31/77 A	*			49,246
GORDON-LICKEY, BARBARA Superior Colliculus and the Control of Eye Movements University of Oregon Eugene, Oregon Etiology	5 R01 EY00125-07	629	02/01/76-01/31/77 02/01/73-01/31/78 B (2)	37,634	9,601	47,235	169,478
GRAF, VIRGIL A Behavioral Visual Function Dartmouth College Hanover, New Hampshire Etiology	5 R01 EY00355-08	630	06/01/76-05/31/77 06/01/74-05/31/77 D (2)	12,253	6,108	18,361	36,030
GRANDA, ALLEN M Processing of Visual Information University of Delaware Newark, Delaware Etiology	5 R01 EY01540-08	631	06/01/76-05/31/77 06/01/75-05/31/78 D (1)	34,800	24,720	59,520	116,685



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GROBSTEIN, PAUL Development of Connectivity in Visual Systems University of Chicago Pharmacological and Physiological Sciences Chicago, Illinois Etiology	1 R01 EY01658-01	632	04/01/76-03/31/77 04/01/76-03/31/79 A	29,428	7,088	36,516	84,214
GUILLERY, RAINER W Abnormalities in Visual Pathways University of Wisconsin, Madison Madison, Wisconsin Etiology Diagnosis	5 R01 EY00962-04	633	09/01/75-08/31/76 09/01/74-08/31/78 A	27,931	9,112	37,043	96,726
HAMASAKI, DUO I Effect of Visual Deprivation on Vision University of Miami Miami, Florida Etiology	5 R01 EY00376-08	634	05/01/76-04/30/77 05/01/74-04/30/77 A	50,791	19,926	70,717	146,233
HANSON, THOMAS E Developmental Topology of Vertebrate Visual Systems Temple University Philadelphia, Pennsylvania Etiology	5 R01 EY01469-02	635	06/30/76-06/29/77 06/30/75-06/29/78 A	19,200	9,172	28,372	66,857
HARTH, ERICH Visual Receptive Fields by a New Method Syracuse University Syracuse, New York Etiology	5 R01 EY01215-03	636	02/01/76-01/31/77 02/01/74-01/31/77 D (1)	28,107	15,214	43,321	97,237
HARTING, JOHN K Cortical Effects of Sensory Deprivation University of Wisconsin, Madison Madison, Wisconsin Etiology	5 R01 EY01277-02	637	09/01/75-11/30/76 09/01/74-11/30/76 A	19,023	7,462	26,485	48,609
HARTLINE, PETER H Integration of Visual and Infrared Neural Images University of Illinois, Urbana Physiology and Biophysics Urbana, Illinois Etiology	5 R01 EY01539-02	638	09/01/75-08/31/76 09/09/74-08/31/77 D (1)	25,260	12,045	37,305	80,159
HARWERTH, RONALD S Behavioral Measures of Binocular Vision University of Houston Houston, Texas Etiology Diagnosis Treatment	5 R01 EY01139-03	639	05/01/76-04/30/77 05/01/74-04/30/77 D (2)	13,752	6,140	19,892	61,700
HASCHKE, RICHARD H Retrograde Axonal Transport in the Visual System University of Washington Seattle, Washington Etiology	1 R01 EY01756-01	640	05/01/76-04/30/77 05/01/76-04/30/79 D (1)	49,183	15,284	64,467	161,895
HELD, RICHARD Vision and Visuomotor Mechanisms Massachusetts Institute of Technology Psychology Cambridge, Massachusetts Etiology Diagnosis	2 R01 EY01191-04	641	06/01/76-04/30/77 06/01/76-04/30/79 D (1)	61,365	25,077	86,442	204,822
HENDRICKSON, ANITA E Development of the Primate Retina and Visual Thalamus University of Washington Seattle, Washington Etiology	5 R01 EY01208-03	642	01/01/76-12/31/76 01/01/74-12/31/76 A	34,509	8,400	42,909	107,813

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HERMANN, HOWARD T Compensatory Visual Neural Changes with Eye Movements Massachusetts Institute of Technology Aeronautics and Astronautics Cambridge, Massachusetts Etiology	9 R01 EY01415-02A1	643	06/30/75-10/31/76 06/30/75-10/31/78 B (2)	*			147,159
HIBBARD, EMERSON Visual Restoration Pennsylvania State University University Park, Pennsylvania Etiology Treatment	2 R01 EY01071-04	644	03/01/76-02/28/77 03/01/76-02/28/79 A	31,499	13,592	45,091	97,796
HICKEY, TERRY L Development of the Retinogeniculate System University of Alabama in Birmingham Physiological Optics Birmingham, Alabama Etiology Diagnosis	5 R01 EY01338-02	645	06/30/76-06/29/77 06/30/75-06/29/77 A	20,502	3,876	24,378	40,657
HIGGINS, KENT E Peripheral Mechanisms in Functional Amblyopia Pennsylvania College of Optometry Physiological Optics Philadelphia, Pennsylvania Etiology Diagnosis	5 R23 EY01473-02	646	02/01/76-01/31/77 02/15/75-01/31/78 A	7,500	1,539	9,039	21,500
HIGGINS, KENT E Suprathreshold Spatial Interaction in Photopic Vision Pennsylvania College of Optometry Physiological Optics Philadelphia, Pennsylvania Treatment	5 R01 EY00986-02	647	06/30/76-06/29/77 06/30/75-06/29/78 D (2)	7,593	2,574	10,167	27,835
HIGHSTEIN, STEPHEN M Synaptic Linkage of the Reticulo-Oculomotor Circuits Yeshiva University Neuroscience New York, New York Etiology Diagnosis	5 R01 EY01670-02	648	06/30/76-06/29/77 06/30/75-06/29/78 B (2)	8,400	0	8,400	31,700
HILL, RICHARD M Effects of Refractive Error in Single Cell Coding Ohio State University Physiological Optics Columbus, Ohio Etiology Diagnosis	5 R01 EY01325-03	649	05/01/76-04/30/77 05/01/74-04/30/77 C	12,068	5,615	17,683	41,496
HIRSCH, HELMUT V Development and Functions of the Visual Cortex State University of New York at Albany Biological Sciences Albany, New York Etiology	2 R01 EY01268-04	650	06/30/76-04/30/77 06/30/76-04/30/79 A	37,046	8,637	45,683	106,814
HODOS, WILLIAM A Behavioral Analysis of Visual System Evolution University of Maryland Psychology College Park, Maryland Etiology	5 R01 EY00735-06	651	06/01/76-05/31/77 06/01/74-05/31/77 D (1)	49,910	19,426	69,336	139,298
HOLLINS, MARK Causes and Time Course of Accommodative Micropsia University of North Carolina, Chapel Hill Psychology Chapel Hill, North Carolina Etiology	5 R23 EY01391-02	652	05/01/76-04/30/77 05/01/74-04/30/77 C	6,850	0	6,850	21,568

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HUBEL, DAVID H Organization of the Visual System Harvard University Neurobiology Boston, Massachusetts Etiology	5 R01 EY00605-17	653	12/01/75-11/30/76 12/01/72-11/30/77 D (1)	120,883	66,318	187,201	431,914
HUGHES, WILLIAM F, III Neuronal Development in the Visual System Rush-Presbyterian-St. Luke's Medical Center Pathology Chicago, Illinois Etiology	5 R23 EY01477-02	654	06/01/76-05/31/77 06/01/75-05/31/78 A	7,500	2,898	10,398	22,500
JACOBS, GERALD H Studies of All-Cone Visual Systems University of California, Santa Barbara Psychology Santa Barbara, California Etiology	5 R01 EY00105-07	655	09/01/75-03/31/77 09/01/73-03/31/77 D (2)	19,099	11,396	30,495	118,735
KAISERMAN-ABRAMOF, ITA R Structure and Development of the Visual System Case Western Reserve University Anatomy Cleveland, Ohio Etiology	2 R01 EY01018-04	656	06/01/76-05/31/81 06/01/76-05/31/81 A	47,776	18,964	66,740	200,031
KALIL, RONALD E Developmental Studies of the Visual System University of Wisconsin, Madison Anatomy Madison, Wisconsin Etiology Diagnosis	5 R01 EY01331-03	657	09/01/75-08/31/76 09/01/74-08/31/77 A	27,919	9,434	37,353	107,555
KANDEL, GILLRAY L Photopic and Scotopic Vision of Strabismic Amblyopia Rensselaer Polytechnic Institute Psychology Troy, New York Etiology Diagnosis	5 R01 EY00800-04	658	05/01/76-04/30/77 05/01/74-04/30/77 A	30,150	12,862	43,012	86,300
KELLER, EDWARD L Studies on the Alert Primate Oculomotor System University of California, Berkeley Electronics Research Laboratory Berkeley, California Etiology Diagnosis	5 R01 EY00955-05	659	02/01/76-01/31/77 02/01/75-01/31/80 B (2)	26,112	8,930	35,042	115,403
KELLY, DONALD H Processing of Elementary Visual Stimuli Stanford Research Institute Menlo Park, California Etiology Diagnosis	5 R01 EY01128-03	660	05/01/76-04/30/77 05/01/75-04/30/80 D (2)	52,341	52,016	104,357	223,235
KERTESZ, ANDREW E Functional Aspects of Panum's Fusional Areas Northwestern University Electrical Engineering Evanston, Illinois Etiology Diagnosis	5 R01 EY01055-05	661	06/30/76-06/29/77 06/30/75-06/29/79 D (2)	25,838	11,178	37,016	130,420
KICHLITER, ERNEST E, JR Retinal Projections for Wavelength Discrimination University of Illinois, Urbana Physiology and Biophysics Urbana, Illinois Etiology	1 R01 EY01736-01	662	06/30/76-06/29/77 06/30/76-06/29/79 D (2)	36,190	7,164	43,354	86,357

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KRIPKE, BERNARD R Organization of Striate Cortex University of Utah Physiology Salt Lake City, Utah Etiology	5 R01 EY01316-03	663	02/01/76-07/31/77 02/01/74-01/31/77 D (1)	30,083	14,889	44,972	94,184
KRONAUER, RICHARD E Cone Inputs to Human Spatial Detectors Harvard University Engineering and Applied Physics Cambridge, Massachusetts Etiology	1 R01 EY01808-01	664	06/30/76-06/29/77 06/30/76-06/29/79 D (2)	52,367	14,784	67,151	114,139
KRUGER, LAWRENCE Visual Projections of Vertebrate Midbrain University of California, Los Angeles Anatomy Los Angeles, California Etiology Diagnosis	5 R01 EY00571-12	665	06/30/76-06/29/77 06/30/75-06/29/78 A	47,295	15,422	62,717	146,927
LAEMLE, LOIS K An Experimental Study of the Developing Visual System College of Medicine and Dentistry of New Jersey Anatomy Newark, New Jersey Etiology	5 R01 EY01174-03	666	09/01/75-11/30/76 09/01/73-11/30/76 A	19,483	5,842	25,325	71,872
LARIMER, JAMES O Opponent-Color Codes: Cancellation and Magnitude Codes Temple University Psychology Philadelphia, Pennsylvania Etiology	5 R01 EY01172-04	667	06/01/76-05/31/77 06/01/74-05/31/77 D (2)	18,698	11,195	29,893	68,465
LESSELL, SIMMONS Experimental Optic Neuropathies Boston University Ophthalmology Boston, Massachusetts Etiology	5 R01 EY00013-10	668	04/01/76-03/31/77 04/01/74-03/31/79 E (3)	51,521	23,111	74,632	217,147
LETTVIN, JEROME Y Studies in the Physiology and Psychology of Vision Massachusetts Institute of Technology Biology Cambridge, Massachusetts Etiology Diagnosis	5 R01 EY01149-03	669	06/01/75-11/30/77 06/01/73-11/30/77 D (2)	*			163,474
LEVI, DENNIS M Contrast Sensitivity in Amblyopia University of Houston Clinical Optometric Sciences Houston, Texas Etiology Diagnosis	1 R01 EY01728-01	670	05/01/76-04/30/77 05/01/76-04/30/79 D (2)	24,089	7,118	31,207	60,063
LEVINSON, JOHN Z Spatial and Temporal Properties of Human Vision University of Maryland Psychology College Park, Maryland Etiology	1 R01 EY01640-01	671	05/01/76-04/30/77 05/01/76-04/30/79 D (2)	39,075	13,032	52,107	116,935
LIT, ALFRED Effects of Illumination on Binocular Space Perception Southern Illinois University Psychology Carbondale, Illinois Etiology	5 R01 EY00383-14	672	06/01/76-05/31/77 06/01/74-05/31/77 D (2)	27,925	14,763	42,688	79,743

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LUND, JENNIFER S Structure and Development of Visual Cortex University of Washington Ophthalmology Seattle, Washington Etiology	5 R01 EY01086-03	673	06/01/75-07/31/76 06/01/73-07/31/76 A	*			99,824
LUND, RAYMOND D Development and Plasticity of Visual Connections University of Washington Biological Structure Seattle, Washington Etiology	5 R01 EY00596-08	674	01/01/76-12/31/76 01/01/74-12/31/78	41,870	12,404	54,274	233,639
MACK, ARIEN Study of Perception During Pursuit Eye Movements New School for Social Research Psychology New York, New York Etiology	5 R01 EY01135-02	675	09/01/74-09/30/76 09/01/73-09/30/76 D (2)	*			32,856
MAKOUS, WALTER L Duplicity Theory and the Stiles-Crawford Effect University of Washington Psychology Seattle, Washington Etiology	2 R01 EY00788-04	676	03/01/76-12/31/76 03/01/76-12/31/78 D (2)	31,215	8,142	39,357	98,831
MARROCCO, RICHARD T Physiology of Visual Afferent Pathways University of Oregon Psychology Eugene, Oregon Etiology	5 R01 EY01286-03	677	05/01/76-04/30/77 05/01/74-04/30/77 D (1)	21,536	4,640	26,176	69,393
MASON, MILDRED Spatial Redundancy, Item Identification, and Reading Iowa State University of Science and Technology Psychology Ames, Iowa Etiology Diagnosis	1 R01 EY01813-01	678	06/01/76-05/31/77 06/01/76-05/31/79 D (2)	15,168	5,509	20,677	48,370
MATIN, LEONARD Eye Movements and Visual Direction Columbia University Psychology New York, New York Etiology	5 R01 EY00375-07	679	01/01/76-12/31/76 04/01/74-12/31/77 B (2)	67,232	20,842	88,074	205,413
MICHAEL, CHARLES R Neurophysiology of All-Cone Vision Yale University Physiology New Haven, Connecticut Etiology	5 R01 EY00568-08	680	10/01/75-11/30/76 10/01/71-11/30/76 D (1)	41,558	17,236	58,794	137,885
MOTE, MICHAEL I Cellular Basis of Visual Integration Temple University Biology Philadelphia, Pennsylvania Etiology	5 R01 EY00784-05	681	09/01/75-08/31/76 09/09/74-08/31/77 D (1)	26,455	17,135	43,590	114,437
MUNSON, JOHN B Eye Movement-Induced Changes in Visual Function University of Florida Neuroscience Gainesville, Florida Etiology Diagnosis	5 R01 EY01264-03	682	06/01/76-05/31/78 06/01/74-05/31/78 D (2)	21,325	7,561	28,886	66,591



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MURPHY, ELIZABETH H Development of the Mammalian Visual System University of Chicago Behavioral Sciences Chicago, Illinois Etiology Diagnosis	1 R01 EY01122-01A1	683	06/01/74-12/31/76 06/01/74-12/31/76 A	*			65,554
NAKAYAMA, KEN Three-Dimensional Eye Rotation Measurements: Strabismus Institutes of Medical Sciences Smith-Kettlewell Institute of Visual Science San Francisco, California Etiology Diagnosis Treatment	5 R01 EY01582-02	684	06/01/76-05/31/77 06/01/75-05/31/78 B (1)	32,272	12,155	44,427	99,686
NODA, HIROHARU Neuronal Basis of Visual Perception in Eye Movements University of California, Los Angeles Brain Research Institute Los Angeles, California Etiology Diagnosis	5 R01 EY01051-03	685	10/01/75-11/30/76 10/01/73-11/30/76 A	30,299	10,362	40,661	93,534
NORTON, THOMAS T Neural Mechanisms of Developing Vision Duke University Psychology Durham, North Carolina Etiology	5 R01 EY01085-03	686	01/01/75-09/30/76 01/01/73-09/30/76 D (1)	*			67,763
OYSTER, CLYDE W Neurophysiology of Optokinetic Nystagmus University of Alabama in Birmingham Physiological Optics Birmingham, Alabama Etiology Diagnosis	5 R01 EY00771-05	687	05/01/76-04/30/77 05/01/75-04/30/78 B (2)	23,339	4,277	27,616	78,936
PEARLMAN, ALAN L Functional Organization of the Visual System Washington University Physiology and Biophysics University City, Missouri Etiology	5 R01 EY00621-05	688	05/01/76-04/30/77 05/01/74-04/30/77 A	14,131	17,976	32,107	127,884
PIANTANIDA, THOMAS P Temporal Processing in Human Color Vision University of Alabama in Birmingham Physiological Optics Birmingham, Alabama Etiology	1 R01 EY01757-01	689	06/01/76-05/31/77 06/01/76-05/31/79 D (2)	29,257	4,703	33,960	69,357
POKORNY, JOEL M Psychophysical Studies of Color-Defective Observers University of Chicago Ophthalmology Chicago, Illinois Etiology Diagnosis	5 R01 EY00901-03	690	04/01/76-03/31/77 04/01/74-03/31/77 A	6,264	13,380	19,644	111,770
POLLEN, DANIEL A Spatial Selectivity in Non-Striate Visual Cortices Massachusetts General Hospital Neurosurgical Service Boston, Massachusetts Etiology	2 R01 EY00597-07	691	04/01/76-12/31/76 04/01/76-12/31/78 D (1)	39,314	14,256	53,570	172,037
POLSE, KENNETH A Contact Lens Effects on Refractive Error University of California, Berkeley School of Optometry Berkeley, California Treatment	1 R01 EY01755-01	692	06/30/76-06/29/77 06/30/76-06/29/77 C	35,000	11,970	46,970	35,000

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POWERS, ALICE S Visual System Structure and Function Bryn Mawr College Psychology Bryn Mawr, Pennsylvania Etiology Diagnosis	1 R01 EY01657-01	693	06/30/76-06/29/77 06/30/76-06/29/79 A	14,353	6,123	20,476	40,403
REINECKE, ROBERT D Stereopsis and Microtropia in Amblyopia Pathogenesis Albany Medical College Ophthalmology Albany, New York Etiology Diagnosis	2 R01 EY00752-05	694	05/01/76-04/30/77 05/01/76-04/30/79 A	38,450	14,829	53,279	105,478
REINECKE, ROBERT D Young Vision Scientist Travel Support Albany Medical College Ophthalmology Albany, New York	5 R13 EY01371-03	695	12/01/75-11/30/76 12/01/74-11/30/76 A	10,492	0	10,492	20,984
REMMEL, RONALD S Inputs to Pontine Reticular Formation to the MLF University of Arkansas Medical Sciences Campus Physiology Little Rock, Arkansas Etiology	1 R01 EY01794-01	696	06/01/76-05/31/77 06/01/76-05/31/79 D (1)	19,460	6,655	26,115	59,628
RICHARDS, WHITMAN A Studies of Binocular Vision Massachusetts Institute of Technology Psychology Cambridge, Massachusetts Etiology Diagnosis	5 R01 EY00742-05	697	02/01/76-01/31/77 02/01/75-01/31/78 D (2)	30,889	12,333	43,222	92,783
Riggs, Lorrin A The Accuracy of Retinal Image Stabilization Brown University Psychology Providence, Rhode Island Etiology Diagnosis	1 R01 EY01871-01	698	09/30/76-09/29/77 09/30/76-09/29/79 D (2)	27,651	6,460	34,111	79,559
RIGGS, LORRIN A Human Visual Responses in Retina and Cortex Brown University Psychology Providence, Rhode Island Etiology	5 R01 EY00744-05	699	10/01/75-12/31/76 10/01/71-12/31/76 D (3)	24,799	12,518	37,317	142,265
RINALDUCCI, EDWARD J Photopic Mechanisms of Dark Adaptation University of Virginia Psychology Charlottesville, Virginia Etiology Diagnosis	5 R01 EY00353-08	700	05/01/76-04/30/77 05/01/75-04/30/78 D (2)	11,162	5,943	17,105	35,266
ROBINSON, DAVID A Oculomotor Control System Johns Hopkins University Ophthalmology Baltimore, Maryland Etiology Diagnosis	5 R01 EY00598-08	701	05/01/76-04/30/77 05/01/74-04/30/79 B (2)	56,008	26,056	82,064	225,891
RUSHTON, WILLIAM A H Transmission of Signals Through Human Retina Florida State University Tallahassee, Florida Etiology	5 R01 EY00684-05	702	02/01/75-07/31/76 02/01/71-07/31/76 D (2)	*			103,660
SAKITT, BARBARA Problems in Human Vision Stanford University Psychology Stanford, California Etiology Diagnosis	5 R01 EY01336-03	703	06/01/76-05/31/77 06/01/74-05/31/77 D (2)	22,132	10,321	32,453	73,952

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SANSBURY, RICHARD V The Multiple-Channel Theory for Spatial Vision Trinity College Psychology Washington, District of Columbia Etiology	1 R01 EY01743-01	704	06/01/76-05/31/77 06/01/76-05/31/79 D (2)	38,449	1,661	40,110	83,266
SCALIA, FRANK Anatomical Correlates of Subcortical Visual Function Downstate Medical Center Anatomy New York, New York Etiology Diagnosis	5 R01 EY00909-05	705	06/30/76-06/29/77 06/30/75-06/29/78 D (1)	17,034	6,467	23,501	55,516
SCHILLER, PETER H Studies of Interaction Between Eye Movement and Vision Massachusetts Institute of Technology Psychology Cambridge, Massachusetts Etiology	5 R01 EY00676-06	706	05/01/76-04/30/77 05/01/74-04/30/79 D (1)	57,942	24,807	82,749	221,043
SCHNEIDER, GERALD E Neuropsychological Studies of the Visual System Massachusetts Institute of Technology Psychology Cambridge, Massachusetts Etiology	2 R01 EY00126-07	707	03/01/76-01/31/77 03/01/76-01/31/79 A	64,108	28,312	92,420	223,274
SCHOR, CLIFTON M Abnormal Eye Movement in Strabismus and Amblyopia Oregon Optometric Center Portland, Oregon Etiology Diagnosis Treatment	1 R01 EY01692-01	708	06/30/76-06/29/77 06/30/76-06/29/79 B (1)	31,848	13,266	45,114	87,990
SCOBAY, ROBERT P Detection of Visual Image Displacements University of California, Davis Behavioral Biology Davis, California Etiology Diagnosis	5 R01 EY01495-02	709	06/30/76-06/29/77 06/30/75-06/29/78 D (2)	29,775	9,944	39,719	90,301
SEKULER, ROBERT M Movement and Contour Processes in Human Vision Northwestern University Psychology Evanston, Illinois Etiology	5 R01 EY00321-11	710	02/01/76-01/31/77 02/01/74-01/31/77 D (2)	45,555	25,993	71,548	158,034
SHAPLEY, ROBERT M Spatial Summation and Dynamics of Visual Neurons Rockefeller University Biophysics New York, New York Etiology	5 R01 EY01472-02	711	09/01/75-08/31/76 09/01/74-08/31/79 D (1)	34,344	8,247	42,591	136,625
SHARMA, SANSAR C Genesis of Neural Specificity in the Visual System New York Medical College Ophthalmology New York, New York Etiology Diagnosis	5 R01 EY01426-02	712	06/01/76-05/31/77 06/01/75-05/31/78 A	52,526	20,994	73,520	179,428
SHERMAN, S MURRAY Effects of Visual Deprivation on the Visual System University of Virginia Physiology Charlottesville, Virginia Etiology Diagnosis Treatment	5 R01 EY01565-02	713	06/01/76-05/31/77 06/01/75-05/31/79 A	58,550	11,116	69,666	160,705
SMITH, ROBERT A, JR The Physiology of Tuned Channels in Human Vision University of New Hampshire Psychology Durham, New Hampshire Etiology	5 R23 EY01475-02	714	09/01/75-11/30/76 09/01/74-11/30/76 D (2)	6,702	1,400	8,102	14,084

Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
SNODDERLY, D MAX, JR Functional Description of Visual Mechanisms Eye Research Institute of Retina Foundation Boston, Massachusetts Etiology	5 R01 EY01520-02	715	06/01/76-05/31/77 06/01/75-05/31/78 D (1)	40,070	18,966	59,036	153,389
SPARKS, DAVID L Eye Movement Control: The Role of Brain Stem Neurons University of Alabama in Birmingham Psychology Birmingham, Alabama Etiology	5 R01 EY01189-03	716	05/01/75-07/31/76 05/01/73-07/31/76 B (2)	*			75,119
SPEAR, PETER D Visual Integration in the Brain University of Wisconsin, Madison Psychology Madison, Wisconsin Etiology	1 R01 EY01916-01	717	06/01/76-05/31/77 06/01/76-05/31/80 D (1)	44,119	13,444	57,563	123,381
SPELTING, HARRY G Excitability of Visual Pathways University of Texas Health Science Center Sensory Sciences Center Houston, Texas Etiology	5 R01 EY00381-08	718	06/01/76-05/31/77 06/01/74-05/31/77 D (1)	34,643	13,651	48,294	97,364
SPRAGUE, JAMES M Brain Mechanisms of Visual Learning and Transfer University of Pennsylvania Anatomy Philadelphia, Pennsylvania Etiology	2 R01 EY00577-11	719	03/01/76-11/30/76 03/01/76-11/30/80 D (1)	47,942	18,452	66,394	267,151
STEINMAN, ROBERT M Stimulus Variables in Monocular Fixation University of Maryland Psychology College Park, Maryland Etiology Diagnosis	5 R01 EY00325-11	720	06/01/76-05/31/77 06/15/74-05/31/77 D (2)	29,412	13,476	42,888	192,989
STEPHENS, GEORGE M Skin Electrode Electroretinogram: Value for VER College of Medicine and Dentistry of New Jersey Surgery Newark, New Jersey Etiology Diagnosis	5 R01 EY01320-02	721	06/01/76-05/31/77 06/01/75-05/31/77 D (3)	22,523	4,563	27,086	50,028
STERLING, PETER Anatomy and Physiology of Visuo-Motor Systems University of Pennsylvania Anatomy Philadelphia, Pennsylvania Etiology	5 R01 EY00828-05	722	02/01/76-03/31/77 02/01/72-03/31/77 D (1)	42,402	19,293	61,695	153,505
STERNHEIM, CHARLES E Spatial and Temporal Interactions in Human Vision University of Maryland Psychology College Park, Maryland Etiology	5 R01 EY00539-06	723	06/01/76-05/31/78 06/01/74-05/31/78 D (2)	17,761	7,579	25,340	70,168
STUART, ANN E Neural Mechanisms in Processing Visual Information Harvard University Neurobiology Boston, Massachusetts Etiology	5 R01 EY01188-03	724	06/01/75-07/31/76 06/01/73-07/31/76 D (1)	*			80,188
TELLER, DAVIDA Y Vision in Human Infants University of Washington Psychology Seattle, Washington Etiology Diagnosis	1 R01 EY01695-01	725	06/30/76-06/29/77 06/30/76-06/29/79 D (2)	10,388	2,914	13,302	32,317



Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
THOMAS, JAMES P Spatial Integration in Human Vision University of California, Los Angeles Los Angeles, California Etiology	5 R01 EY00360-09	726	06/01/75-08/31/76 06/01/73-08/31/76 D (2)	*			80,384
TIGGES, JOHANNES W The Efferent Fibers of the Visual Cortices Emory University Neuroanatomy Atlanta, Georgia Etiology Diagnosis	5 R01 EY00638-05	727	06/30/76-06/29/77 06/30/75-06/29/78 D (1)	31,318	4,434	35,752	95,111
TRUJILLO-CENOZ, OMAR Neuron Differentiation and Specification in the Eye Biological Sciences Research Institute Comparative Neuroanatomy Montevideo, Uruguay Etiology	1 R01 EY01674-01	728	06/01/76-05/31/77 06/01/76-05/31/79 A	9,860	0	9,860	22,580
Tso, MARK O Pathology and Pathogenesis of Edema of Optic Disc Universities Associated for Research and Education in Pathology, Inc. Ophthalmic Pathology Bethesda, Maryland Etiology	2 R01 EY01163-04	729	05/01/76-06/30/76 05/01/76-06/30/76 E (1)	3,508	665	4,173	3,508
TULUNAY-KEESEY, ULKER Visual Processes with a Motionless Retinal Image University of Wisconsin, Madison Madison, Wisconsin Etiology	2 R01 EY00308-09	730	04/01/76-12/31/76 04/01/76-12/31/79 D (2)	32,457	12,740	45,197	134,362
VICTOR, MAURICE Vitamin B12 Deficiency in Rhesus Monkeys Case Western Reserve University Cleveland, Ohio Etiology Diagnosis	1 R01 EY01663-01	731	05/01/76-04/30/77 05/01/76-04/30/81 A	21,417	3,033	24,450	84,165
VON NOORDEN, GUNTER K Clinical and Laboratory Studies of Amblyopia Baylor College of Medicine Houston, Texas Etiology Diagnosis	2 R01 EY01120-04	732	03/01/76-01/31/77 03/01/76-01/31/81 A	58,536	14,391	72,927	260,671
WATERMAN, TALBOT H Sensory Mechanisms in Visual Orientation Yale University Biology New Haven, Connecticut Etiology	5 R01 EY00405-09	733	01/01/76-12/31/76 06/01/75-12/31/77 D (1)	42,968	22,991	65,959	193,661
WATKINS, DAVID W, III Visual Deprivation: Effects on Striate Neurons University of Virginia Charlottesville, Virginia Etiology Diagnosis	5 R23 EY01492-02	734	02/01/76-01/31/77 02/01/75-01/31/77 A	4,142	0	4,142	17,248
WEISSTEIN, NAOMI The Organization of Complex Visual Perception State University of New York at Buffalo Buffalo, New York Etiology	5 R01 EY01330-03	735	11/01/75-08/31/77 10/15/73-08/31/77 D (2)	28,508	13,950	42,458	83,050
WESTHEIMER, GERALD Oculomotor Control University of California, Berkeley Physiology-Anatomy Berkeley, California Etiology Diagnosis	5 R01 EY00592-08	736	02/01/76-01/31/77 02/01/72-01/31/77 B (2)	81,295	26,503	107,798	264,484



Principal Investigator Title of Project Institution Department City and State Research Objective	Grant Number	Entry Number	Current Budget Period Project Period Subprogram (Area)	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
WESTHEIMER, GERALD Retinal and Central Visual Function University of California, Berkeley Physiology-Anatomy Berkeley, California Etiology Diagnosis	5 R01 EY00220-15	737	10/01/75-11/30/76 10/01/72-11/30/77 D (2)	29,446	10,903	40,349	142,007
WHITEHEAD, RUSSELL A Morphology and Function of Visual Systems Macalester College Biology Saint Paul, Minnesota Etiology Diagnosis	5 R01 EY00526-05	738	06/30/76-06/29/77 06/30/75-06/29/78 D (1)	25,254	11,908	37,162	75,062
WIESEL, TORSTEN N Studies of the Visual System Harvard University Neurobiology Boston, Massachusetts Etiology	5 R01 EY00606-12	739	09/01/75-08/31/76 09/01/71-08/31/76 D (1)	84,102	45,879	129,981	297,217
WINTERS, RAY W Single Cell Studies in Optic Tract University of Miami Psychology Coral Gables, Florida Etiology	2 R01 EY00701-02A1	740	05/01/74-09/30/76 05/01/74-09/30/76 D (1)	*			92,568
Yee, Robert D Ocular Motor Subsystems in Congenital Nystagmus Los Angeles County Harbor General Hospital Surgery Torrance, California Etiology Diagnosis	1 R01 EY01853-01	741	09/30/76-09/29/77 09/30/76-09/29/78 A	14,020	0	14,020	17,108
Zee, David S Oculomotor Disorders: Clinical and Experimental Study Johns Hopkins University Ophthalmology Baltimore, Maryland Etiology Diagnosis	1 R01 EY01849-01	742	09/30/76-09/29/77 09/30/76-09/29/79 B (2)	25,982	13,251	39,233	59,647
Total Active Grants for Program: 174			Total Dollars				
Total Grants for Programs Receiving FY 1976 Funds: 147			for Program:	4,830,229	1,951,079	6,781,308 +	18,730,438

\* Prior year funding

+ 26 grants received an additional \$231,177 in supplemental awards

Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
NATIONAL EYE INSTITUTE RESEARCH PROJECT GRANTS ACTIVE FY 1976 — SUBPROGRAM LISTING			
A. Congenital, Developmental, and Degenerative Abnormalities			
AREES, EDWARD A	Development of Optic Pathway During Embryogenesis	Massachusetts General Hospital	57,028
CAFFERATA, ROBERT L	The Expression of Neuronal Specificity	University of Rochester	49,473
CASAGRANDE, VIVIEN A	Effects of Visual Deprivation in Primates	Vanderbilt University	67,200
CHOW, KAO L	Neurology of Vision and Learning	Stanford University	66,145
COWAN, W MAXWELL	Quantitative Anatomical Studies of Visual Deprivation	Washington University	90,990
DAW, NIGEL W	Neural Mechanisms of Vision	Washington University	50,275
Duffy, Frank H	<i>The Role of Inhibition in Experimental Amblyopia</i>	Children's Hospital Medical Center	95,209
FIFKOVA, EVA	Visual Deprivation and Synapses of Visual Centers	University of Colorado	40,029
GEORGE, STEPHEN A	Vision in Triploid Animals	Amherst College	12,808
GOLLENDER, MORTON	Development Studies of Stereoscopic Vision	Oregon Optometric Center	*
GROBSTEIN, PAUL	Development of Connectivity in Visual Systems	University of Chicago	36,516
GUILLERY, RAINER W	Abnormalities in Visual Pathways	University of Wisconsin, Madison	37,043
HAMASAKI, DUO I	Effect of Visual Deprivation on Vision	University of Miami	70,717
HANSON, THOMAS E	Developmental Topology of Vertebrate Visual Systems	Temple University	28,372
HARTING, JOHN K	Cortical Effects of Sensory Deprivation	University of Wisconsin, Madison	26,485
HENDRICKSON, ANITA E	Development of the Primate Retina and Visual Thalamus	University of Washington	42,909
HIBBARD, EMERSON	Visual Restoration	Pennsylvania State University	45,091
HICKEY, TERRY L	Development of the Retinogeniculate System	University of Alabama in Birmingham	24,378
HIGGINS, KENT E	Peripheral Mechanisms in Functional Amblyopia	Pennsylvania College of Optometry	9,039
HIRSCH, HELMUT V	Development and Functions of the Visual Cortex	State University of New York at Albany	45,683
HUGHES, WILLIAM F, III	Neuronal Development in the Visual System	Rush-Presbyterian-St. Luke's Medical Center	10,398
KAISERMAN-ABRAMOF, ITA R	Structure and Development of the Visual System	Case Western Reserve University	66,740
KALIL, RONALD E	Developmental Studies of the Visual System	University of Wisconsin, Madison	37,353
KANDEL, GILLRAY L	Photopic and Scotopic Vision of Strabismic Amblyopia	Rensselaer Polytechnic Institute	43,012
KRUGER, LAWRENCE	Visual Projections of Vertebrate Midbrain	University of California, Los Angeles	62,717
LAEMLE, LOIS K	An Experimental Study of the Developing Visual System	College of Medicine and Dentistry of New Jersey	25,325
LUND, JENNIFER S	Structure and Development of Visual Cortex	University of Washington	*
LUND, RAYMOND D	Development and Plasticity of Visual Connections	University of Washington	54,274
Murphy, Elizabeth H	<i>Development of the Mammalian Visual System</i>	University of Chicago	*
NODA, HIROHARU	Neuronal Basis of Visual Perception in Eye Movements	University of California, Los Angeles	40,661
PEARLMAN, ALAN L	Functional Organization of the Visual System	Washington University	32,107

Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
POKORNY, JOEL M	Psychophysical Studies of Color-Defective Observers	University of Chicago	19,644
POWERS, ALICE S	Visual System Structure and Function	Bryn Mawr College	20,476
REINECKE, ROBERT D	Stereopsis and Microtropia in Amblyopia Pathogenesis	Albany Medical College	53,279
REINECKE, ROBERT D	Young Vision Scientist Travel Support	Albany Medical College	10,492
SCHNEIDER, GERALD E	Neuropsychological Studies of the Visual System	Massachusetts Institute of Technology	92,420
SHARMA, SANSAR C	Genesis of Neural Specificity in the Visual System	New York Medical College	73,520
SHERMAN, S MURRAY	Effects of Visual Deprivation on the Visual System	University of Virginia	69,666
TRUJILLO-CENOS, OMAR	Neuron Differentiation and Specification in the Eye	Biological Sciences Research Institute, Uruguay	9,860
VICTOR, MAURICE	Vitamin B12 Deficiency in Rhesus Monkeys	Case Western Reserve University	24,450
VON NOORDEN, GUNTER K	Clinical and Laboratory Studies of Amblyopia	Baylor College of Medicine	72,927
WATKINS, DAVID W, III	Visual Deprivation: Effects on Striate Neurons	University of Virginia	4,142
Yee, Robert D	Ocular Motor Subsystems in Congenital Nystagmus	Los Angeles County Harbor General Hospital	14,020
Total Active Grants for Subprogram: 43			
Total Grants for Subprogram Receiving FY 76 Funds: 38		Total Dollars For Subprogram:	1,623,644

B. Strabismus and Other Oculomotor Disorders

1. Strabismus

COGAN, ALEXANDER I	Interocular Suppression in Strabismus	Institutes of Medical Sciences, San Francisco	50,467
NAKAYAMA, KEN	Three-Dimensional Eye Rotation Measurements: Strabismus	Institutes of Medical Sciences, San Francisco	44,427
SCHOR, CLIFTON M	Abnormal Eye Movement in Strabismus and Amblyopia	Oregon Optometric Center	45,114
Total Active Grants for Area: 3			
Total Grants for Area Receiving FY 76 Funds: 3		Total Dollars for Area:	140,008

2. Oculomotor Control

BACH-Y-RITA, PAUL	Peripheral Neurophysiology of Eye Movements	Insitutes of Medical Sciences, San Francisco	*
BAKER, ROBERT G	Eye Movement: Physiological Organization	University of Iowa	*
Baker, Robert G	Eye Movement: Physiological Organization	New York University	50,714
BARMACK, NEAL H	The Peripheral Components of Eye Movement Control	Good Samaritan Hospital and Medical Center	65,678
BREININ, GOODWIN M	Fine Structure of Normal and Pathologic Ocular Muscle	New York University	119,205
CHIARANDINI, DANTE J	Physiology and Pharmacology of Extraocular Muscles	New York University	53,609
COLLINS, CARTER C	Human Oculomotor Motility	Institutes of Medical Sciences, San Francisco	74,265
FUCHS, ALBERT F	Neurophysiological Studies of the Oculomotor System	University of Washington	32,884
GESTRIN, PHYLLIS J	Neural Control of Eye Movements	University of Texas, Austin	49,157
GORDON-LICKEY, BARBARA	Superior Colliculus and the Control of Eye Movements	University of Oregon	47,235
HERMANN, HOWARD T	Compensatory Visual Neural Changes with Eye Movements	Massachusetts Institute of Technology	*
HIGHSTEIN, STEPHEN M	Synaptic Linkage of the Reticulo-Oculomotor Circuits	Yeshiva University	8,400

Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
KELLER, EDWARD L	Studies on the Alert Primate Oculomotor System	University of California, Berkeley	35,042
MATIN, LEONARD	Eye Movements and Visual Direction	Columbia University	88,074
OYSTER, CLYDE W	Neurophysiology of Optokinetic Nystagmus	University of Alabama in Birmingham	27,616
ROBINSON, DAVID A	Oculomotor Control System	Johns Hopkins University	82,064
SPARKS, DAVID L	Eye Movement Control: The Role of Brain Stem Neurons	University of Alabama in Birmingham	*
WESTHEIMER, GERALD	Oculomotor Control	University of California, Berkeley	107,798
Zee, David S	<i>Oculomotor Disorders: Clinical and Experimental Study</i>	Johns Hopkins University	39,233
Total Active Grants for Area: 19			
Total Grants for Area Receiving FY 76 Funds: 13		Total Dollars for Area:	791,027
Total Active Grants for Subprogram: 22			
Total Grants for Subprogram Receiving FY 76 Funds: 16		Total Dollars for Subprogram:	931,035

### C. Optical and Pupillary Disorders

COHEN, GERALD H	Pupil Response as an Index for Chromatic Mechanisms	University of Rochester	41,580
HILL, RICHARD M	Effects of Refractive Error in Single Cell Coding	Ohio State University	17,683
HOLLINS, MARK	Causes and Time Course of Accommodative Micropsia	University of North Carolina, Chapel Hill	6,850
POLSE, KENNETH A	Contact Lens Effects on Refractive Error	University of California, Berkeley	46,970
Total Active Grants for Subprogram: 4			
Total Grants for Subprogram Receiving FY 76 Funds: 4		Total Dollars for Subprogram:	113,083

### D. Visual Sensory and Perceptual Disorders

#### 1. Neural Mechanisms

BAKER, FRANK H	Thalamic Mechanisms in Visual Processing	Johns Hopkins University	36,392
BARLOW, ROBERT B, JR	Functional Organization of the Visual System	Syracuse University	87,877
BERNARD, GARY D	Optical Information Processing in Eyes	Yale University	*
BERNARD, GARY D	Optical Information Processing in Eyes	Yale University	91,395
BISHOP, LEWIS G	Neurophysiology of an Optomotor Response	University of Southern California	48,181
BOYNTON, ROBERT M	Psychophysiological and Optical Studies of Vision	University of California, San Diego	*
BROOKS, BARBARA A	Visual Processing During Eye Movement	University of Texas Health Science Center	67,078
BROOKS, BARBARA A	Visual Processing During Eye Movement	University of Texas Health Science Center	*
CARLSON, STANLEY D	Neuropile Reconstruction by HVEM and Other Methods	University of Wisconsin Madison	38,671
COOL, STEVEN J	Correlates of Binocular Visual Stimulation	University of Texas Health Science Center	*
CROSSLAND, WILLIAM J	Development and Maintenance of Visual Connections	Wayne State University	28,090
DEVALOIS, RUSSELL L	Electrophysiology of Color Vision	University of California, Berkeley	64,462
EBBESSON, SVEN O	Organization of the Vertebrate Visual System	University of Virginia	86,851
EMERSON, ROBERT C	Image Movement: Neural Processing Mechanisms	University of Rochester	39,693



Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
ENROTH-CUGELL, CHRISTINA A	Retinal Ganglion Cell Responses to Time Varying Stimuli	Northwestern University	56,785
FAHRENBACH, WOLF H	Organization of Visual Centers in the Limulus Brain	Medical Research Foundation of Oregon	22,626
FREEMAN, JOHN A	Synaptic Organization of the Optic Tectum	Vanderbilt University	38,164
GANZ, LEO	Neuropsychology	Stanford University	32,450
GIOLLI, ROLAND A	Visual and Non-Visual Cortical Efferents	University of California, Irvine	16,077
GOLDBERG, STEPHEN J	Inputs to Abducens Neurons: An Intracellular Study	Virginia Commonwealth University	9,671
GRANDA, ALLEN M	Processing of Visual Information	University of Delaware	59,520
HARTH, ERICH	Visual Receptive Fields by a New Method	Syracuse University	43,321
HARTLINE, PETER H	Integration of Visual and Infrared Neural Images	University of Illinois, Urbana	37,305
HASCHKE, RICHARD H	Retrograde Axonal Transport in the Visual System	University of Washington	64,467
HELD, RICHARD	Vision and Visuomotor Mechanisms	Massachusetts Institute of Technology	86,442
HODOS, WILLIAM	A Behavioral Analysis of Visual System Evolution	University of Maryland	69,336
HUBEL, DAVID H	Organization of the Visual System	Harvard University	187,201
KRIPKE, BERNARD R	Organization of Striate Cortex	University of Utah	44,972
MARROCCO, RICHARD T	Physiology of Visual Afferent Pathways	University of Oregon	26,176
MICHAEL, CHARLES R	Neurophysiology of All-Cone Vision	Yale University	58,794
MOTE, MICHAEL I	Cellular Basis of Visual Integration	Temple University	43,590
NORTON, THOMAS T	Neural Mechanisms of Developing Vision	Duke University	*
POLLEN, DANIEL A	Spatial Selectivity in Non-Striate Visual Cortices	Massachusetts General Hospital	53,570
REMEL, RONALD S	Inputs to Pontine Reticular Formation Projections to the MLF	University of Arkansas Medical Sciences	26,115
SCALIA, FRANK	Anatomical Correlates of Subcortical Visual Function	Downstate Medical Center	23,501
SCHILLER, PETER H	Studies of Interaction Between Eye Movement and Vision	Massachusetts Institute of Technology	82,749
SHAPLEY, ROBERT M	Spatial Summation and Dynamics of Visual Neurons	Rockefeller University	42,591
SNODDERLY, D MAX, JR	Functional Description of Visual Mechanisms	Eye Research Institute of Retina Foundation	59,036
SPEAR, PETER D	Visual Integration in the Brain	University of Wisconsin, Madison	57,563
SPELTING, HARRY G	Excitability of Visual Pathways	University of Texas Health Science Center	48,294
SPRAGUE, JAMES M	Brain Mechanisms of Visual Learning and Transfer	University of Pennsylvania	66,394
STERLING, PETER	Anatomy and Physiology of Visuo-Motor Systems	University of Pennsylvania	61,695
STUART, ANN E	Neural Mechanisms in Processing Visual Information	Harvard University	*
TIGGES, JOHANNES W	The Efferent Fibers of the Visual Cortices	Emory University	35,752



Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
WATERMAN, TALBOT H	Sensory Mechanisms in Visual Orientation	Yale University	65,959
WHITEHEAD, RUSSELL A	Morphology and Function of Visual Systems	Macalester College, Saint Paul	37,162
WIESEL, TORSTEN N	Studies of the Visual System	Harvard University	129,981
Total Active Grants for Area: 47			
Total Grants for Area Receiving FY 76 Funds: 41			
Total Dollars for Area:			2,275,949

## 2. *Psychophysical Functions*

BROWN, JOHN L	Vision: Spatial, Temporal and Adapting Effects	University of Rochester	*
RUSHTON, WILLIAM A H	Transmission of Signals Through Human Retina	Florida State University	*
AREND, LAWRENCE E	Analysis of Frequency Channels in Human Vision	Brandeis University	38,025
BERKLEY, MARK A	Orientation Selective Mechanisms in Vision	Florida State University	40,432
BRIDGEMAN, BRUCE	Temporal Coding and Processing in Monkey Visual Cortex	University of California, Santa Cruz	29,310
CHAPMAN, ROBERT M	Visual Mechanisms for Wavelength Discrimination	University of Rochester	52,668
CHINO, YUZO M	Stereopsis in the Common and Siamese Cat	Illinois College of Optometry	16,945
COHN, THEODORE E	The Detection of Visual Signals	University of California, Berkeley	9,795
CORWIN, THOMAS R	Surround Fields and Temporal Brightness Enhancement	Northeastern University	*
CRANE, HEWITT D	Experimental Study of Visual Accommodation	Stanford Research Institute	95,614
DRUM, BRUCE A	Roles of Tonic and Phasic Neural Systems in Vision	George Washington University	45,165
FOX, ROBERT	Stereoscopic Vision in Animals	Vanderbilt University	20,785
FOX, ROBERT	The Suppression Mechanism in Binocular Rivalry	Vanderbilt University	42,772
Blake, Randolph	<i>Psychophysical Studies of Spatial Vision</i>	<i>Northwestern University</i>	6,722
FREEMAN, RALPH D	Visual Cortex: Single-Unit Studies of Plasticity	University of California, Berkeley	*
GOLDSTEIN, E BRUCE	Velocity Preference of Neurons in Cat's LGN and Retina	University of Pittsburgh	25,938
GOLDSTEIN, E BRUCE	Visual Adaptation: Peripheral and Central Mechanisms	University of Pittsburgh	38,292
GRAF, VIRGIL A	Behavioral Visual Function	Dartmouth College	18,361
HARWERTH, RONALD S	Behavioral Measures of Binocular Vision	University of Houston	19,892
HIGGINS, KENT E	Suprathreshold Spatial Interaction in Photopic Vision	Pennsylvania College of Optometry	10,167
JACOBS, GERALD H	Studies of All-Cone Visual Systems	University of California/ Santa Barbara	30,495
KELLY, DONALD H	Processing of Elementary Visual Stimuli	Stanford Research Institute	104,357
KERTESZ, ANDREW E	Functional Aspects of Panum's Fusional Areas	Northwestern University	37,016
KICHLER, ERNEST E, JR	Retinal Projections for Wavelength Discrimination	University of Illinois, Urbana	43,354
KRONAUER, RICHARD E	Cone Inputs to Human Spatial Detectors	Harvard University	67,151
LARIMER, JAMES O	Opponent-Color Codes: Cancellation and Magnitude Codes	Temple University	29,893
LETTVIN, JEROME Y	Studies in the Physiology and Psychology of Vision	Massachusetts Institute of Technology	*

Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
LEVI, DENNIS M	Contrast Sensitivity in Amblyopia	University of Houston	31,207
LEVINSON, JOHN Z	Spatial and Temporal Properties of Human Vision	University of Maryland	52,107
LIT, ALFRED	Effects of Illumination on Binocular Space Perception	Southern Illinois University	42,688
MACK, ARIEN	Study of Perception During Pursuit Eye Movements	New School of Social Research, New York	*
MAKOUS, WALTER L	Duplicity Theory and the Stiles-Crawford Effect	University of Washington	39,357
MASON, MILDRED	Spatial Redundancy, Item Identification, and Reading	Iowa State University of Science and Technology	20,677
MUNSON, JOHN B	Eye Movement-Induced Changes in Visual Function	University of Florida	28,886
PIANTANIDA, THOMAS P	Temporal Processing in Human Color Vision	University of Alabama in Birmingham	33,960
RICHARDS, WHITMAN A	Studies of Binocular Vision	Massachusetts Institute of Technology	43,222
Riggs, Lorrin A	<i>The Accuracy of Retinal Image Stabilization</i>	<i>Brown University</i>	34,111
RINALDUCCI, EDWARD J	Photopic Mechanisms of Dark Adaptation	University of Virginia	17,105
SAKITT, BARBARA	Problems in Human Vision	Stanford University	32,453
SANSBURY, RICHARD V	The Multiple-Channel Theory for Spatial Vision	Trinity College, Washington, D.C.	40,110
SCOBIE, ROBERT P	Detection of Visual Image Displacements	University of California, Davis	39,719
SEKULER, ROBERT W	Movement and Contour Processes in Human Vision	Northwestern University	71,548
SMITH, ROBERT A, JR	The Physiology of Tuned Channels in Human Vision	University of New Hampshire	8,102
STEINMAN, ROBERT M	Stimulus Variables in Monocular Fixation	University of Maryland	42,888
STERNHEIM, CHARLES E	Spatial and Temporal Interactions in Human Vision	University of Maryland	25,340
TELLER, DAVIDA Y	Vision in Human Infants	University of Washington	13,302
THOMAS, JAMES P	Spatial Integration in Human Vision	University of California, Los Angeles	*
TULUNAY-KEESEY, ULKER	Visual Processes with a Motionless Retinal Image	University of Wisconsin, Madison	45,197
WEISSTEIN, NAOMI	The Organization of Complex Visual Perception	State University of New York at Buffalo	42,458
WESTHEIMER, GERALD	Retinal and Central Visual Function	University of California, Berkeley	40,349
Total Active Grants for Area: 50			
Total Grants for Area Receiving FY 76 Funds: 41			
Total Dollars for Area:			1,527,102

### 3. Electrophysiological Techniques Applicable to Man

ARMINGTON, JOHN C	Stimulus Alternation and Visual Potentials	Northeastern University	54,692
BIERSDORF, WILLIAM R	Electrophysiological Studies of Visual Adaptation	Ohio State University	*
RIGGS, LORRIN A	Human Visual Responses in Retina and Cortex	Brown University	37,317
STEPHENS, GEORGE M	Skin Electrode Electroretinogram: Value for VER	College of Medicine and Dentistry of New Jersey	27,086
Total Active Grants for Area: 4			
Total Grants for Area Receiving FY 76 Funds: 3			
Total Dollars for Area:			119,095
Total Active Grants for Subprogram: 101			
Total Grants for Subprogram Receiving FY 76 Funds: 85			
Total Dollars for Subprogram:			3,922,146

Principal Investigator	Title of Project	Institution	FY 1976 Total Awarded
<b>E. Sensory and Motor Disorders Related to Specific Disease Processes</b>			
<i>1. Vascular and Circulatory Abnormalities</i>			
Tso, MARK O	Pathology and Pathogenesis of Edema of Optic Disc	Universities Associated for Research and Education in Pathology, Inc.	4,173
Total Active Grants for Area: 1			
Total Grants for Area Receiving FY 76 Funds: 1		Total Dollars for Area:	4,173
<i>2. Inflammatory Diseases</i>			
<i>3. Metabolic, Toxic, and Traumatic Disorders</i>			
LESSELL, SIMMONS	Experimental Optic Neuropathies	Boston University	74,632
Total Active Grants for Area: 1			
Total Grants for Area Receiving FY 76 Funds: 1		Total Dollars for Area:	74,632
<i>4. Tumors</i>			
Total Active Grants for Subprogram: 2			
Total Grants for Subprogram Receiving FY 76 Funds: 2		Total Dollars for Subprogram:	78,805
<b>F. Rehabilitation</b>			
COLLINS, CARTER C	Portable Seeing Aid	Institutes of Medical Sciences, San Francisco	79,497
DAVIDSON, PHILIP W	Rehabilitation of Haptic Perception in the Blind	University of Rochester	33,098
Total Active Grants for Subprogram: 2			
Total Grants for Subprogram Receiving FY 76 Funds: 2		Total Dollars for Subprogram:	112,595
Total Active Grants for Program: 174			
Total Grants for Program Receiving FY 76 Funds: 147		Total Dollars for Program:	6,781,308 +

\* Prior year funding

+ 26 grants received an additional \$231,177 in supplemental awards

Principal Investigator Title of Project Institution Department City and State	Grant Number	Entry Number	Current Budget Period Project Period	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
NATIONAL EYE INSTITUTE SPECIALIZED CLINICAL RESEARCH CENTER GRANT ACTIVE FY 1976							
JAMPOLSKY, ARTHUR Clinical Strabismus Center Grant Institutes of Medical Sciences Smith-Kettlewell Institute of Visual Science San Francisco, California	5 P50 EY01585-02	743	06/30/76-06/29/77 06/30/75-06/29/77	103,597	36,296	139,893	203,511
Total Grants for Program Receiving FY 1976 Funds: 1			Total Dollars for Program:	103,597	36,296	139,893	203,511

Principal Investigator Title of Project	Project Number	Entry Number	Current Budget Period Project Period	FY 1976 Funding
<b>NATIONAL EYE INSTITUTE INTRAMURAL RESEARCH PROJECTS ACTIVE FY 1976</b>				
ALLEN, DAVID C Review of the Eye Examination Data from National Health and Nutrition Survey	Z01 EY00101-02 OBE	744	07/01/75-09/30/76 07/01/75-06/30/76	6,774
COGAN, DAVID G Quantitative Study of Clinical Eye Movement Abnormalities	Z01 EY00020-02 CB	745	07/01/75-09/30/76 07/01/75-06/30/76	56,151
DE MONASTERIO, FRANCISCO M Physiology of the Primate Visual System	Z01 EY00026-05 LVR	746	07/01/75-09/30/76 07/01/75-06/30/76	25,949
KOLLARITS, CAROL R Videotape Pupillometry	Z01 EY00021-02 CB	747	07/01/75-09/30/76 07/01/75-06/30/76	1,337
KOLLARTIS, CAROL R B-Scan and EMI-Scan Evaluation of Orbital Space- Occupying Lesions	Z01 EY00171-01 CB	748	07/01/75-09/30/76 07/01/75-06/30/76	11,975
SCHWARTZ, J THEODORE Effect of Treatment on the Progression of Myopia	Z01 EY00042-06 OBE	749	07/01/75-09/30/76 07/01/75-06/30/76	3,989
YUEN, KAREN Robustness of Some Sequential Statistical Procedures	Z01 EY00031-02 OBE	750	07/01/75-09/30/76 07/01/75-06/30/76	5,026
YUEN, KAREN Comparison of Two Survival Curves	Z01 EY00032-02 OBE	751	07/01/75-09/30/76 07/01/75-06/30/76	5,026
YUEN, KAREN Non-Parametric Multi-Sample Location Tests Under Heteroscedasticity	Z01 EY00033-02 OBE	752	07/01/75-09/30/76 07/01/75-06/30/76	7,688
YUEN, KAREN Statistical Packaged Programs Design and Development	Z01 EY00034-02 OBE	753	07/01/75-09/30/76 07/01/75-06/30/76	2,512
YUEN, KAREN The Studentized Wilcoxon Statistic for the Behrens- Fisher Problem	Z01 EY00167-01 OBE	754	07/01/75-09/30/76 07/01/75-06/30/76	5,026
Total Projects for Program: 11			Total Dollars for Program:	131,453





## VI. Multiprogram Research Projects



## VI. Multiprogram Research Projects

Principal Investigator Title of Project Institution Department City and State	Grant Number	Entry Number	Current Budget Period Project Period	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
NATIONAL EYE INSTITUTE CORE CENTER GRANTS ACTIVE FY 1976							
BALAZS, ENDRE A Basic Ophthalmic Research Program Columbia University Ophthalmology New York, New York	5 P30 EY00396-09	756	06/01/76-05/31/77 06/01/73-05/31/78	120,003	37,201	157,204	581,805
BROWN, JOHN L Visual Science Research Center Support University of Rochester Center for Visual Science Rochester, New York	5 P30 EY01319-03	757	02/01/76-01/31/77 02/01/74-01/31/77	35,354	18,246	53,600	130,057
DOHLMAN, CLAES H Ophthalmic Research Core Facilities Massachusetts Eye and Ear Infirmary Ophthalmology Boston, Massachusetts	5 P30 EY01537-02	758	06/30/76-06/29/77 06/30/75-06/29/80	78,909	32,973	111,882	433,958
FUTTERMAN, SIDNEY Interdisciplinary Vision and Ophthalmic Research Center University of Washington Ophthalmology Seattle, Washington	1 P30 EY01730-01	759	06/01/76-05/31/77 06/01/76-05/31/81	68,806	17,393	86,199	380,992
JAMPOLSKY, ARTHUR The Visual Sciences Research Center Grant Institutes of Medical Sciences San Francisco, California	2 P30 EY01186-04	760	06/01/76-05/31/77 06/01/76-05/31/81	104,586	42,548	147,134	570,913
MAUMENEE, A EDWARD Core Center Grant — The Wilmer Institute Johns Hopkins Hospital Baltimore, Maryland	1 P30 EY01765-01	761	06/09/76-05/31/77 06/09/76-05/31/79	139,801	66,624	206,425	293,063
O'CONNOR, G RICHARD Inflammatory Diseases of the Eye: Core Support University of California, San Francisco Proctor Foundation for Research in Ophthalmology San Francisco, California	5 P30 EY01597-02	762	06/30/76-06/29/77 06/30/75-06/29/80	69,887	23,901	93,788	390,321
SCHEPENS, CHARLES L Eye Research Core Services Support Eye Research Institute of Retina Foundation Boston, Massachusetts	1 P30 EY01784-01	763	06/04/76-05/31/77 06/04/76-05/31/81	185,780	91,653	277,433	1,096,436

Principal Investigator Title of Project Institution Department City and State	Grant Number	Entry Number	Current Budget Period Project Period	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
SEARS, MARVIN L Vision Research Center Yale University Ophthalmology and Visual Sciences New Haven, Connecticut	5 P30 EY00785-05	764	8/01/75-07/31/76 07/01/71-07/31/76	122,621	59,384	182,005	568,549
STRAATSMA, BRADLEY R Vision Research Center University of California, Los Angeles Jules Stein Eye Institute Los Angeles, California	5 P30 EY00331-10	765	11/01/75-10/31/76 11/01/73-10/31/78	198,838	44,806	243,644	758,056
Total Grants for Mechanism Receiving FY 1976 Funds: 10			Total Dollars for Mechanism: 1,124,585    434,729    1,559,314    5,204,150				

VII. Vision Research Training  
and Career Development Awards





# VII. Vision Research Training and Career Development Awards

Program Director Title of Project Institution Department City and State	Training Award Number	Entry Number	Current Budget Period Project Period	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
NATIONAL EYE INSTITUTE INSTITUTIONAL VISION RESEARCH TRAINING AWARDS ACTIVE FY 1976 (MULTIPROGRAM)							
<i>Graduate Training Grants</i>							
ARMALY, MANSOUR F Research Training in Ophthalmic Sciences George Washington University Ophthalmology Washington, District of Columbia	5 T01 EY00047-10	766	07/01/76-06/30/77 07/01/73-06/30/78			7,245	246,294
BROWN, JOHN L Visual Sciences University of Rochester Center for Visual Science Rochester, New York	5 T01 EY00086-03	767	07/01/76-06/30/77 06/01/74-06/30/79	59,362	3,540	62,902	293,145
COWAN, W MAXWELL Program for Training in Vision Research Washington University Anatomy and Neurobiology University City, Missouri	5 T01 EY00092-03	768	07/01/76-06/30/77 06/01/74-06/30/79	119,555	8,688	128,243	659,432
DAVIS, MATTHEW D Ophthalmology Research Training Program University of Wisconsin, Madison Ophthalmology Madison, Wisconsin	5 T01 EY00039-12	769	07/01/76-06/30/77 07/01/73-06/30/78	51,354	4,109	55,463	240,406
DOHLMAN, CLAES H Training in Ophthalmic Research and Training Massachusetts Eye and Ear Infirmary Ophthalmology Boston, Massachusetts	5 T01 EY00089-03	770	07/01/76-06/30/77 06/01/74-06/30/79	116,675	9,099	125,774	599,804
FENDER, DEREK H Biological Systems Analysis of the Visual Process California Institute of Technology Biology and Applied Science Pasadena, California	5 T01 EY00085-03	771	07/01/76-06/30/77 06/01/74-06/30/79	24,258	1,379	25,637	130,032
GOLDBERG, MORTON F Ophthalmology University of Illinois Medical Center Ophthalmology Chicago, Illinois	5 T01 EY00024-19	772	07/01/76-06/30/77 07/01/72-06/30/77	48,973	3,918	52,891	289,692
HARRIS, JOHN E Training Ophthalmology University of Minnesota Ophthalmology Minneapolis, Minnesota	5 T01 EY0027-18	773	07/01/76-06/30/77 07/01/72-06/30/77	43,084	3,447	46,531	341,891
HOYT, WILLIAM F Ophthalmology and Neurology University of California, San Francisco Surgery San Francisco, California	5 T01 EY00083-05	774	07/01/76-06/30/77 07/01/72-06/30/77	13,396	1,071	14,467	67,786

Program Director Title of Project Institution Department City and State	Training Award Number	Entry Number	Current Budget Period Project Period	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
LEIBOWITZ, HOWARD M Ophthalmology Boston University Surgery Boston, Massachusetts	5 T01 EY00042-11	775	07/01/76-06/30/77 07/01/73-06/30/78	52,592	4,208	56,800	319,344
LETTVIN, JEROME Y Studies in the Physiology of Vision Massachusetts Institute of Technology Biology Cambridge, Massachusetts	5 T01 EY00090-03	776	07/01/76-06/30/77 06/01/74-06/30/79	83,008	4,955	87,963	395,527
MARG, ELWIN Training Program in Physiological Optics University of California, Berkeley Physiological Optics Berkeley, California	5 T01 EY00076-05	777	07/01/76-06/30/77 07/01/72-06/30/77	69,454	5,240	74,694	290,392
MAUMENEE, A EDWARD Ophthalmology Training Grant Johns Hopkins University Ophthalmology Baltimore, Maryland	5 T01 EY00027-18	778	07/01/76-06/30/77 07/01/73-06/30/78	104,360	8,349	112,709	749,893
OSTLER, HOWARD B Ocular Inflammatory Diseases University of California, San Francisco Ophthalmology San Francisco, California	5 T01 EY00094-03	779	07/01/76-06/30/77 06/01/74-06/30/79	68,109	5,440	73,549	521,647
PAYSEUR, G STEPHON Developmental Training Grant Howard University Surgery Washington, District of Columbia	5 T01 EY00057-12	780	07/01/76-06/30/77 07/01/72-06/30/77	44,289	3,543	47,832	251,739
PICO, GUILLERMO Graduate Research Training Grant University of Puerto Rico, Medical Science Campus Ophthalmology San Juan, Puerto Rico	5 T01 EY00019-20	781	07/01/76-06/30/77 07/01/73-06/30/78	51,448	4,116	55,564	286,900
ROSENTHAL, A RALPH Training in Research in the Basic Sciences Stanford University Surgery Stanford, California	5 T01 EY00051-09	782	07/01/76-06/30/77 07/01/73-06/30/78	68,801	5,504	74,305	387,135
SCHEIE, HAROLD G Research and Academic Careers in Ophthalmology University of Pennsylvania Ophthalmology Philadelphia, Pennsylvania	5 T01 EY00049-10	783	07/01/76-06/30/77 07/01/72-06/30/77	52,275	4,182	56,457	380,776
SCHULTZ, RICHARD O Ophthalmology Medical College of Wisconsin Ophthalmology Milwaukee, Wisconsin	5 T01 EY00045-09	784	07/01/76-06/30/77 07/01/72-06/30/77	39,738	3,179	42,917	279,867
SCHWARTZ, BERNARD Training Program in the Visual Sciences New England Medical Center Hospital Ophthalmology Boston, Massachusetts	5 T01 EY00054-08	785	07/01/76-06/30/77 07/01/72-06/30/77	61,982	4,888	66,870	286,776
SERY, THEODORE W Infections and Immunological Response in Ocular Disease Wills Eye Hospital Wills Eye Research Institute Philadelphia, Pennsylvania	5 T01 EY00084-05	786	07/01/76-06/30/77 07/01/72-06/30/77	43,830	3,506	47,336	271,697

Program Director Title of Project Institution Department City and State	Training Award Number	Entry Number	Current Budget Period Project Period	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
SWAN, KENNETH C Ophthalmology Training Grant University of Oregon Health Sciences Center Ophthalmology Portland, Oregon	5 T01 EY00006-22	787	07/01/76-06/30/77 07/01/72-06/30/77	37,844	3,027	40,871	271,408
WIESEL, TORSTEN N Basic Neurobiological Sciences Harvard University Neurobiology Boston, Massachusetts	5 T01 EY00082-05	788	07/01/76-06/30/77 07/01/72-06/30/77	101,798	7,584	109,382	507,398
YANOFF, MYRON Ophthalmic Pathology Training University of Pennsylvania Ophthalmology Philadelphia, Pennsylvania	5 T01 EY00079-05	789	07/01/76-06/30/77 07/01/72-06/30/77	50,834	4,066	54,900	263,307
ZIMMERMAN, LORENZ E Ophthalmic Pathology American Academy of Ophthalmology and Otolaryngology Ophthalmic Pathology Rochester, Minnesota	5 T01 EY00032-15	790	07/01/76-06/30/77 07/01/72-06/30/77	80,000	0	80,000	485,829
Total Grants for Mechanism: 25				Total Dollars for Mechanism: 1,493,727	107,575	1,601,302	8,818,117

*National Research Service Awards (Institutional)*

ALPERN, MATHEW Training Program in Vision Research University of Michigan Physiology Ann Arbor, Michigan	5 T32 EY07022-02	791	07/01/76-06/30/77 07/01/75-06/30/80	72,339	5,313	77,652	374,277
ANDERSON, DOUGLAS R Ophthalmic Specialty Research Training University of Miami Ophthalmology Miami, Florida	5 T32 EY07021-02	792	07/01/76-06/30/77 07/01/75-06/30/80	72,877	5,830	78,707	340,741
ARMINGTON, JOHN C Correlative Methods for Studying Visual Function Northeastern University Psychology Boston, Massachusetts	1 T32 EY07036-01	793	07/01/76-06/30/77 07/01/76-06/30/80	36,198	2,749	38,947	149,282
BALAZS, ENDRE A Basic Sciences in Ophthalmology Columbia University Ophthalmology New York, New York	5 T32 EY07002-02	794	07/01/76-06/30/77 07/01/75-06/30/80	85,682	6,646	92,328	427,886
BROWN, STUART I Research Training in Ocular Connective Tissues Eye and Ear Hospital of Pittsburgh Ophthalmology Pittsburgh, Pennsylvania	1 T32 EY07032-01	795	07/01/76-06/30/77 07/01/76-06/30/81	31,507	2,520	34,027	161,919
CHRISTENSEN, JERRY Research Training in Vision Science University of Alabama in Birmingham Physiological Optics Birmingham, Alabama	1 T32 EY07033-02	796	07/01/76-06/30/77 07/01/76-06/30/81	20,666	1,597	22,263	174,597
DOHLMAN, CLAES H Physiology and Biochemistry of Corneal Disease Eye Research Institute of Retina Foundation Boston, Massachusetts	5 T32 EY07018-02	797	07/01/76-06/30/77 07/01/75-06/30/80	38,753	3,080	41,833	199,713
EBREY, THOMAS G Physiology and Biochemistry of Vision University of Illinois, Urbana Physiology and Biophysics Urbana, Illinois	5 T32 EY07005-02	798	07/01/76-06/30/77 07/01/75-06/30/80	42,644	3,085	45,729	218,472

Program Director Title of Project Institution Department City and State	Training Award Number	Entry Number	Current Budget Period Project Period	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
EDELHAUSER, HENRY F Research Training in Eye Physiology and Biochemistry Medical College of Wisconsin Physiology Milwaukee, Wisconsin	5 T32 EY07016-02	799	07/01/76-06/30/77 07/01/75-06/30/80	25,488	1,801	27,289	129,030
ELLIOTT, JAMES H Visual Sciences Research Training Program Vanderbilt University Ophthalmology Nashville, Tennessee	1 T32 EY07007-01A1	800	07/01/76-06/30/77 07/01/76-06/30/81	61,024	4,110	65,134	388,446
FENDER, DEREK H Studies of the Visual System California Institute of Technology Jorgensen Laboratory of Information Science Pasadena, California	5 T32 EY07011-02	801	07/01/76-06/30/77 07/01/75-06/30/80	34,246	2,739	36,985	192,102
FERRY, ANDREW P Multi-Disciplinary Research Relevant to Eye Diseases Mount Sinai School of Medicine Ophthalmology New York, New York	5 T32 EY0701402	802	07/01/76-06/30/77 07/01/75-06/30/80	67,918	5,353	73,271	327,642
GALE, JAMES L Epidemiology Training in Eye Disease University of Washington Epidemiology and International Health Seattle, Washington	5 T32 EY07017-02	803	07/01/76-06/30/77 07/01/75-06/30/80	55,796	4,041	59,837	278,980
HURVICH, LEO M Training in the Psychophysics and Physiology of Vision University of Pennsylvania Psychology Philadelphia, Pennsylvania	1 T32 EY07035-01	804	07/01/76-06/30/77 07/01/76-06/30/81	121,697	8,362	130,059	639,527
KALINA, ROBERT E Multi-Disciplinary Vision Research Training Program University of Washington Ophthalmology Seattle, Washington	5 T32 EY07013-02	805	07/01/76-06/30/77 07/01/75-06/30/80	63,627	4,882	68,509	350,762
KAUFMAN, HERBERT E Ophthalmology Research Training Program University of Florida Ophthalmology Gainesville, Florida	5 T32 EY07012-02	806	07/01/76-06/30/77 07/01/75-06/30/80	39,835	3,106	42,941	214,513
KAUFMAN, LLOYD Postdoctoral Training Program in Vision Research New York University Psychology New York, New York	5 T32 EY07003-02	807	07/01/76-06/30/77 07/01/75-06/30/80	52,948	4,043	56,991	268,289
KEAN, EDWARD L Multi-Disciplinary Research in the Visual Sciences Case Western Reserve University Surgery Cleveland, Ohio	5 T32 EY07006-02	808	07/01/76-06/30/77 07/01/75-06/30/78	16,171	1,245	17,416	47,403
NOELL, WERNER K Research Training in Eye Physiology and Biochemistry State University of New York at Buffalo Physiology Buffalo, New York	5 T32 EY07019-02	809	07/01/76-06/30/77 07/01/75-06/30/80	98,068	7,605	105,673	411,903
PAK, WILLIAM L Research Training: Visual Physiology and Chemistry Purdue University Biological Sciences West Lafayette, Indiana	5 T32 EY07008-02	810	07/01/76-06/30/77 07/01/75-06/30/80	53,178	3,934	57,112	298,450
POKORNY, JOEL M Assessment of Color Vision in Normal/Diseased Eyes University of Chicago Ophthalmology Chicago, Illinois	5 T32 EY07010-02	811	07/01/76-06/30/77 07/01/75-06/30/80	29,863	2,389	32,252	121,915



Program Director Title of Project Institution Department City and State	Training Award Number	Entry Number	Current Budget Period Project Period	FY 1976 Direct Costs	FY 1976 Indirect Costs	FY 1976 Total Awarded	Direct Costs Recom- mended For Project Period
REINECKE, ROBERT D Academic Ophthalmology Albany Medical College Albany, New York	1 T32 EY07037-01	812	07/01/76-06/30/77 07/01/76-06/30/81	45,205	3,616	48,821	231,213
RIGGS, LORRIN A Visual Psychophysiology Brown University Providence, Rhode Island	1 T32 EY07029-01	813	07/01/76-06/30/77 07/01/76-06/30/79	27,750	2,220	29,970	85,650
SCOTT, ALAN B Eye Movement Disorders Institutes of Medical Sciences Smith-Kettlewell Institute of Visual Science San Francisco, California	5 T32 EY07027-02	814	07/01/76-06/30/77 07/01/75-06/30/80	39,788	3,183	42,971	196,500
SPEHLING, HARRY G Sensory Neural Sciences Research Program University of Texas Health Science Center Sensory Sciences Center Houston, Texas	5 T32 EY07024-02	815	07/01/76-06/30/77 07/01/75-06/30/80	61,116	4,769	65,885	278,534
STRAATSMAN, BRADLEY R Vision Research Training Program University of California, Los Angeles Jules Stein Eye Institute Los Angeles, California	5 T32 EY07026-02	816	07/01/76-06/30/77 07/01/75-06/30/80	92,603	7,008	99,611	372,586
TELLER, DAVIDA Y Visual Sciences Training Program University of Washington Seattle, Washington	1 T32 EY07031-01	817	07/01/76-06/30/77 07/01/76-06/30/81	30,959	2,476	33,435	159,179
TOMITA, TSUNEO Yale Visual Science Training Grant Yale University New Haven, Connecticut	5 T32 EY07000-02	818	07/01/76-06/30/77 07/01/75-06/30/80	122,062	9,032	131,364	642,608
VON NOORDEN, GUNTER K Research Training in Visual Sciences Baylor College of Medicine Houston, Texas	5 T32 EY07001-02	819	07/01/76-06/30/77 07/01/75-06/30/80	33,423	2,674	36,087	161,643
WITKOVSKY, PAUL Sensory Transduction and Neural Processing in Vision State University of New York at Stony Brook Anatomical Sciences Stony Brook, New York	1 T32 EY07039-01	820	07/01/76-06/30/77 07/01/76-06/30/81	32,877	2,630	35,507	288,767
ZADUNAISKY, JOSE A Physiology and Biochemistry of the Eye New York University New York, New York	5 T32 EY07009-02	821	07/01/76-06/30/77 07/01/75-06/30/80	87,753	6,840	94,593	474,327
Total Awards for Mechanism: 31			Total Dollars for Mechanism: 1,694,062	129,147	1,823,199	8,606,856	

Name of Fellow, Degree Sponsor Project Title Sponsoring Institution City and State	Fellowship Number	Entry Number	Current Support Period	FY 1976 Stipends	FY 1976 Other Allow- ances	Costs Recom- mended For Project Period
<b>NATIONAL EYE INSTITUTE INDIVIDUAL POSTDOCTORAL AWARDS ACTIVE FY 1976</b>						
<b>A. Retinal and Choroidal Diseases</b>						
<i>Individual Research Fellowships</i>						
BIRGE, ROBERT R, PhD Kohler, Bryan The Nature of the Low-Lying Excited States of Retinal Harvard University Chemistry Cambridge, Massachusetts	5 F22 EY03059-02	822	09/01/75-09/30/75	992	250	12,492
SILVER, JERRY, PhD LaVail, Matthew M Microphthalmia and Retinal Aplasia in Animal Models Harvard University Neurology-Neuropathology Boston, Massachusetts	5 F22 EY00680-02	823	06/30/76-06/29/77	10,400	3,000	31,200
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Total Active Awards for Program: 2						
Total Awards for Program Receiving FY 1976 Funds: 2			Total Dollars for Program:	11,392	3,250	43,692
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<i>National Research Service Awards (Individual)</i>						
ABRAMS, GARY W, MD Machemer, Robert Diagnosis and Treatment of Retinal Disease University of Miami Ophthalmology Miami, Florida	1 F32 EY05149-01	824	07/01/76-06/30/77	13,200	3,000	26,800
ADAMS, ALOIS J, PhD Shichi, Hitoshi Rhodopsin in the Plasma Membrane National Eye Institute Laboratory of Vision Research Bethesda, Maryland	1 F32 EY05184-01	825	09/13/76-09/12/77	10,000	3,000	20,400
BESHARSE, JOSEPH C, PhD Hollyfield, Joe G Control of Growth and Bilateral Symmetry of the Retina Columbia University Ophthalmology New York, New York	1 F32 EY05119-01	826	05/01/76-04/30/77	12,800	3,000	26,000
BROWN, ROBERT H, PhD Nakanishi, Koji Studies of Deuterated Retinals and Visual Pigments Columbia University Chemistry New York, New York	1 F32 EY05140-01	827	07/01/76-06/30/77	10,000	3,000	21,200
BUCK, STEVEN L, PhD Makous, Walter Spatial Interaction Between Human Rod and Cone Systems University of Washington Psychology Seattle, Washington	1 F32 EY05167-01	828	08/01/76-07/31/77	10,000	3,000	31,200
BUTLER, THOMAS W, PhD Westheimer, Gerald Retinal and Cortical Components of Visual Function University of California, Berkeley Physiology-Anatomy Berkeley, California	1 F32 EY05136-01	829	09/24/76-09/23/77	10,000	3,000	20,400
CARTER, LOUVENIA D, PhD Kuwabara, Toichiro Studies of Vitamin A Deficient Retinas National Eye Institute Laboratory of Vision Research Bethesda, Maryland	1 F32 EY05169-01	830	08/01/76-	10,000	0	20,400

Name of Fellow, Degree Sponsor Project Title Sponsoring Institution City and State	Fellowship Number	Entry Number			FY 1976 Other Allow- ances	Costs Recom- mended For Project Period
Department	Current Support Period	FY 1976 Stipends				
CHARLTON, J SHERWOOD, PhD Fein, Alan The Role of Cations in Visual Adaptation Marine Biological Laboratory Woods Hole, Massachusetts	1 F32 EY05109-01	831	06/01/76-05/31/77	11,500	3,000	11,500
CLAPSHAW, PATRIC A, PhD Dubin, Mark W Role of Adrenergic Amacrine Cells in Retinal Function University of Colorado Molecular, Cellular and Developmental Biology Boulder, Colorado	1 F32 EY05150-01	832	09/01/76-	10,000	3,000	20,400
CRISTY, MARK T, PhD Hoar, W S Regulation of Rhodopsin/Porphyrpsin Ratios in Fishes University of British Columbia Vancouver, Canada	1 F32 EY05123-01	833	07/01/76-06/30/77	10,000	3,000	20,492
DAHL, ROY D, PhD Srebro, R Calcium and Phototransduction State University of New York at Buffalo Buffalo, New York	1 F32 EY05084-01	834	06/23/76-06/22/77	*		22,000
DEGNAN, KEVIN J, PhD Zadunaisky, Jose A The Passage of Nutrients Through the Pigment Epithelium New York University New York, New York	2 F32 EY05059-02	835	07/01/76-06/30/77	10,800	3,000	22,000
FULD, KENNETH, PhD Wooten, Billy R Directional Sensitivity in Human Cones Brown University Providence, Rhode Island	1 F32 EY05145-01	836	09/07/76-09/06/77	10,000	3,000	20,400
GRANVILLE, MARK F, PhD Kohler, Bryan E Intersystem Crossing and Photochemistry of Retinal Wesleyan University Middletown, Connecticut	1 F32 EY05122-01	837	12/01/75-	10,000	3,000	20,400
HIGHTOWER, KENNETH R, PhD Kinsey, V Everett Biophysiology and Physiology of Ion Transport by Ocular Epithelia Oakland University Rochester, Michigan	5 F32 EY05092-02	838	08/01/76-07/31/77	10,400	0	31,200
HONG, KEELUNG, PhD Hubbell, Wayne L Characterization of Rhodopsin in Lipid Bilayers University of California, Berkeley Berkeley, California	1 F32 EY05016-01	839	02/01/76-01/31/77	*		10,000
HOROWITZ, BARRY R, PhD Enoch, Jay M Retinal Receptor Optics University of Florida Gainesville, Florida	1 F32 EY05154-01	840	09/01/76-	12,200	3,000	12,200
KLINE, RICHARD P, PhD Dowling, John Role of Potassium in Retinal Mechanisms Harvard University Cambridge, Massachusetts	1 F32 EY05052-01	841	01/01/76-12/31/76	*	3,000	20,400

Name of Fellow, Degree Sponsor Project Title Sponsoring Institution City and State	Fellowship Number	Entry Number		Current Support Period	FY 1976 Stipends	FY 1976 Other Allow- ances	Costs Recom- mended For Project Period
KOBLASZ, ARTHUR J, MS Ogden, Tom Nonlinear Analysis of the Electroretinogram Estelle Doheny Eye Foundation Los Angeles, California	1 F32 EY05186-01	842		09/01/76-	10,000	3,000	20,400
LEAHY, MICHAEL F, PhD Spiro, T G Raman Studies of the Visual Pigment Rhodopsin Princeton University Chemistry Princeton, New Jersey	1 F32 EY05124-01	843		06/01/76-05/31/77	10,000	3,000	20,400
LEVINSON, EUGENE M, PhD Enroth-Cugell, Christina Light Adaptation in the Cat Retina Northwestern University Bio-Medical Engineering Center Evanston, Illinois	1 F32 EY05148-01	844		09/01/76-08/31/77	10,000	3,000	20,400
MARC, ROBERT E, PhD Stell, William K Teleost Horizontal Cell Connectivity University of California, Los Angeles Jules Stein Eye Institute Los Angeles, California	1 F32 EY05082-01	845		01/05/76-01/04/77	*		20,400
MASTERTON, EILEEN, PhD Chader, Gerald J Hormonal Influence on the Pigment Epithelium National Eye Institute Laboratory of Vision Research Bethesda, Maryland	1 F32 EY05174-01	846		09/07/76-09/06/77	10,000	0	20,692
MCDOWELL, JAMES H, PhD Hargrave, Paul A Test for a Theory of Rhodopsin's Mechanism of Action Southern Illinois University Chemistry and Biochemistry Carbondale, Illinois	1 F32 EY05114-01	847		10/01/76-09/30/77	10,400	3,000	22,000
NAGY, ANDRE R, PhD Stell, William K Color Specific Telodendral Connections in Retinal Cones University of California, Los Angeles Jules Stein Eye Institute Los Angeles, California	5 F32 EY05018-02	848		07/01/76-06/30/77	12,600	3,000	24,800
NARVA, DAVID L, PhD Hochstrasser, Robin M Laser Raman Spectroscopy of Retinals University of Pennsylvania Chemistry Philadelphia, Pennsylvania	1 F32 EY05182-01	849		07/01/76-06/30/77	10,800	3,000	22,000
OAKLEY, BURKS, II, PhD Steinberg, Roy H Pigment Epithelial Interactions with the Neural Retina University of California, San Francisco Physiology San Francisco, California	1 F32 EY05048-01	850		04/01/76-03/31/77	*		31,200
PARKES, JOHN H, PhD Liebman, Paul A Circular Dichroism of Visual Pigments University of Pennsylvania Anatomy Philadelphia, Pennsylvania	1 F32 EY05020-01A1	851		03/15/76-03/14/77	10,800	3,000	33,600
QUIGLEY, HARRY A, MD Anderson, Douglas R Experimental Retrograde Optic Nerve Degeneration University of Miami Ophthalmology Miami, Florida	5 F32 EY05042-02	852		07/01/76-06/30/77	13,200	3,000	26,000

Name of Fellow, Degree Sponsor Project Title Sponsoring Institution City and State	Fellowship Number	Entry Number	Current Support Period	FY 1976 Stipends	FY 1976 Other Allow- ances	Costs Recom- mended For Project Period
ROTHSCHILD, KENNETH J, PhD Stanley, H E Molecular Mechanisms of Normal and Abnormal Vision Boston University Physiology Boston, Massachusetts	1 F32 EY05173-01	853	07/01/76-06/30/77	11,500	3,000	11,500
SCAGLIOTTI, RANDALL H, DVM Cella, R M Ophthalmic Pathology University of California, Davis Davis, California	1 F32 EY05120-01	854	09/01/75-	12,200	0	24,800
SCHWARTZ, STEPHEN, PhD Dratz, Edward A Do Photoreceptor Disks Function by Releasing Calcium? University of California, Santa Cruz Chemistry Santa Cruz, California	1 F32 EY05110-01	855	05/01/76-04/30/77	10,000	3,000	10,000
SCOTT, MARGARET Y, BA Stell, William Ultrastructural Analysis of Retinotectal Projection University of California, Los Angeles Ophthalmology Los Angeles, California	1 F32 EY05178-01	856	07/01/76-	10,000	3,000	31,200
SIMON, ELLIOTT J, MD Hodgkin, Alan L Mechanism of Light Reception in the Vertebrate Retina University of Cambridge Physiological Laboratory Cambridge, United Kingdom	1 F32 EY05142-01	857	09/01/76-	13,600	3,000	13,600
TOPPING, TREXLER M, MD Machemer, Robert Diagnosis and Treatment of Retinal Diseases University of Miami Ophthalmology Miami, Florida	1 F32 EY05163-01	858	07/01/76-06/30/77	13,200	3,000	26,800
WARD, WILLIAM W, PhD Cormier, Milton J Photoreception: Evidence for CA <sup>++</sup> Role in Transduction University of Georgia Biochemistry Athens, Georgia	5 F32 EY05104-02	859	07/01/76-06/30/77	11,900	3,000	23,400
WIGGERT, BARBARA N, PhD Chader, Gerald J Retinal Function as Related to Retinitis Pigmentosa National Eye Institute Laboratory of Vision Research Bethesda, Maryland	1 F32 EY05073-01	860	09/08/75-06/20/76	*		40,800
ZIMMERMAN, ROGER P PhD Dowling, John E Correlating Response and Morphology of Retinal Bipolars Harvard University Biology Cambridge, Massachusetts	1 F32 EY05162-01	861	11/19/76-11/18/77	10,800	3,000	22,000
Total Active Awards for Program: 38			Total Dollars for Program: 351,900			84,000
Total Awards for Program Receiving FY 1976 Funds: 34						765,720

\*Prior year funding



Name of Fellow, Degree Sponsor Project Title Sponsoring Institution City and State	Fellowship Number	Entry Number	Current Support Period	FY 1976 Stipends	FY 1976 Other Allow- ances	Costs Recom- mended For Project Period
B. Corneal Diseases						
Individual Research Fellowships						
GEISSLER, PETER S, PhD Ingraham, Lloyd Sodium Transport Across Human Corneal Endothelium University of California, Berkeley Berkeley, California	5 F22 EY00252-02	862	05/01/76-04/30/77	10,400	3,000	31,200
Total Active Awards for Program: 1						
Total Awards for Program Receiving FY 1976 Funds: 1			Total Dollars for Program:	10,400	3,000	31,200

*National Research Service Awards (Individual)*

ELIASON, JOSEPH A, MD Maurice, David M Vascularization of the Cornea Stanford University    Surgery Stanford, California	1 F32 EY05146-01	863	07/01/76-06/30/77	12,200	3,000	12,200
FOSTER, CHARLES S, MD Dohlman, C H Cyclic Nucleotides in Corneal Epithelium Massachusetts Eye and Ear Infirmary    Cornea Boston, Massachusetts	5 F32 EY05081-02	864	07/01/76-06/30/77	13,600	3,000	26,800
FOULKS, GARY N, MD Dohlman, Claes H Immunopathology of Peripheral Corneal Inflammation Eye Research Institute of Retina Foundation Ophthalmology Boston, Massachusetts	1 F32 EY05132-01	865	07/06/76-07/05/77	13,200	3,000	26,800
FRIEDLAENDER, MITCHELL H, MD O'Connor, G Richard Cell-Mediated Immunity in the Eye University of California, San Francisco Proctor Foundation for Research in Ophthalmology San Francisco, California	1 F32 EY05086-01	866	07/01/76-06/30/77			40,800
KENYON, KENNETH R, MD Dohlman, Claes H Control of Basal Lamina Synthesis by Corneal Epithelium Eye Research Institute of Retina Foundation Cornea Research Boston, Massachusetts	1 F32 EY05133-01	867	07/01/76-	13,200	3,000	13,200
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Total Active Awards for Program: 5						
Total Awards for Program Receiving FY 1976 Funds: 4			Total Dollars for Program:	52,200	12,000	119,800

\*Prior year funding

*National Research Service Awards (Individual)*

DILLON, JAMES P, PhD Spector, Abraham Absolute Configuration of Aromatic Metabolites Columbia University    Ophthalmology New York, New York	5 F32 EY05105-02	868	06/15/76-06/14/77	11,200	3,000	22,000
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Name of Fellow, Degree Sponsor Project Title Sponsoring Institution City and State	Fellowship Number	Entry Number	Current Support Period	FY 1976 Stipends	FY 1976 Other Allow- ances	Costs Recom- mended For Project Period
GIBLIN, FRANK J, PhD Reddy, Venkat The Metabolism and Function of Glutathione in the Lens Oakland University Rochester, Michigan	5 F32 EY05007-02	869	07/01/76-07/31/77	10,400	0	31,200
WORGUL, BASIL V, PhD Merriam, George R, Jr Studies on the Mechanism of Radiocataractogenesis Columbia University New York, New York	5 F32 EY05072-02	870	07/01/76-06/30/77	11,200	3,000	33,600
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Total Active Awards for Program: 3			Total Dollars for Program:		32,800	6,000
Total Awards for Program Receiving FY 1976: 3						86,800

## D. Glaucoma

*National Research Service Awards (Individual)*

CIBIS, GERHARD W, MD Flynn, John T Pupillomotor Perimetry: Use of Pupil Latency Period University of Miami Miami, Florida	1 F32 EY05087-01	871	01/30/76-01/29/77			26,800
DAUBS, JACK G, PhD MacMahon, Brian Studies of the Prevalence and Prediction of Glaucoma Harvard University Boston, Massachusetts	1 F32 EY05118-01	872	05/06/76-05/05/77	13,200	3,000	40,800
GWIN, ROBERT M, DVM Gelatt, K N Primary Glaucoma in the Beagle University of Florida Gainesville, Florida	7 F32 EY05100-02	873	08/01/76-07/31/77	11,900	3,000	36,500
RITCH, ROBERT H, MD Podos, Steven M Clinical and Laboratory Studies in Glaucoma Mount Sinai School of Medicine New York, New York	1 F32 EY05128-01	874	07/01/76-06/30/77	12,200	3,000	24,800
YABLONSKI, MICHAEL E, PhD Becker, Bernard Transport in Secretion of Aqueous Humour Washington University University City, Missouri	1 F32 EY05166-01	875	07/01/76-06/30/77	13,200	3,000	13,200
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Total Active Awards for Program: 5			Total Dollars for Program:		50,500	12,000
Total Awards for Program Receiving FY 1976 Funds: 4						142,100

\*Prior year funding

Name of Fellow, Degree Sponsor Project Title Sponsoring Institution City and State	Fellowship Number	Entry Number	Current Support Period	FY 1976 Stipends	FY 1976 Other Allow- ances	Costs Recom- mended For Project Period
<b>E. Sensory and Motor Disorders of Vision</b>						
<i>Special Fellowship</i>						
KELLY, AMY S, PhD Chow, Kao Liang Functional Organization of Necturus Tectum Stanford University Neurology Stanford, California	5 F03 EY57391-03	876	07/01/76-10/31/76	9,950	1,500	46,750
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Total Active Awards for Program: 1			Total Dollars for Program: 9,950		1,500	46,750
Total Awards for Program Receiving FY 1976 Funds: 1						

*Individual Research Fellowships*

BAUGHMAN, ROBERT W, PhD Wiesel, Torsten N Neurotransmitters of the Cat Visual System Harvard University Neurobiology Boston, Massachusetts	5 F22 EY02317-02	877	01/01/76-12/31/77	10,400	3,000	20,400
DOBSON, MARGARET V, PhD Teller, Davida Y Assessment of Visual Acuity in the Human Infant University of Washington Psychology Seattle, Washington	5 F22 EY01523-02	878	06/29/76-06/28/77	10,400	3,000	31,200
JOHNSON, CHRIS A, PhD Enoch, Jay M Psychophysical Methods Applied to Visual Field Testing University of Florida Ophthalmology Gainesville, Florida	5 F22 EY00173-02	879	01/01/76-09/01/76	10,400	3,000	16,933
OBERDORFER, MICHAEL D, PhD Guillery, R W Abnormal Visual Pathways in Mammals University of Wisconsin, Madison Anatomy Madison, Wisconsin	5 F22 EY00671-02	880	04/01/76-03/31/77	10,400	3,000	20,400
PEEPLES, DAVID R, PhD Teller, Davida Y What Type of Chromatic Vision Do Young Eyes Possess? University of Washington Psychology Seattle, Washington	5 F22 EY04085-02	881	10/01/75-09/30/76	11,200	3,000	22,000
YOUNG, ROCKEFELLER S, PhD Alpern, Mathew Visual Size of Spatial Patterns Produced by Flicker University of Michigan Ophthalmology Ann Arbor, Michigan	5 F22 EY00097-02	882	10/07/75-10/06/76	11,900	3,000	35,700
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Total Active Awards for Program: 6			Total Dollars for Program: 64,700		18,000	146,633
Total Awards for Program Receiving FY 1976 Funds: 6						

*National Research Service Awards (Individual)*

BARRIS, MICHAEL C, MA Dawson, William W Transcleral Visual Evoked Responses University of Florida Ophthalmology Gainesville, Florida	1 F32 EY05180-01	883	07/01/76	10,000	3,000	20,400
BAUMBACH, H DALE, PhD Chow, Kao L Receptive Field Development in DLGN of Rabbit Stanford University Neurology Stanford, California	1 F32 EY05176-01	884	09/01/76-08/31/77	10,800	3,000	22,000

Name of Fellow, Degree Sponsor Project Title Sponsoring Institution City and State	Fellowship Number	Entry Number			FY 1976 Other Allow- ances	Costs Recom- mended For Project Period
Department	Current Support Period	FY 1976 Stipends				
BROWN, WILLIAM L, OD Fry, Glenn A Visibility of Brightness and Color Contrast Borders Ohio State University Columbus, Ohio	1 F32 EY05107-01	885	07/01/76-06/30/77	13,200	3,000	26,800
Physiological Optics						
CROCKETT, ROBERT S, PhD Lawwill, Theodore Experimental Strabismic Amblyopia University of Louisville Louisville, Kentucky	1 F32 EY05025-01	886	06/01/76-05/31/77	*		31,200
Ophthalmology						
DAVIS, BARRY J, PhD Macrides, Foteos Inhibition and Excitation in Visual Cortex Worcester Foundation for Experimental Biology Anatomy Shrewsbury, Massachusetts	1 F32 EY05161-01	887	09/01/76-	10,000	3,000	10,000
DOTY, ROBERT W, JR, PhD Bishop, P O Binocular Vision Near the Monkey's Vertical Meridian Australian National University Canberra, Australia	1 F32 EY05117-01	888	02/01/76-	11,850	3,000	31,200
Physiology						
FROME, FRANCINE S, PhD Boynton, Robert M Perception of Chromatic and Achromatic Borders University of California, San Diego La Jolla, California	1 F32 EY05116-01	889	03/15/76-03/14/77	10,800	3,000	22,000
Psychology						
GREEN, MARC A, PhD Wooten, B R Spatial Selectivity in Retinal and Cortical Potentials Brown University Providence, Rhode Island	1 F32 EY05155-01	890	09/01/76-	10,000	3,000	20,400
Psychology						
GROVER, BARRY G, PhD Sharma, Sansar C Determinants of Neural Connectivity in the Visual System New York Medical College New York, New York	1 F32 EY05137-01	891	07/01/76-	10,000	3,000	20,400
Ophthalmology						
HADDAD, GENEVIEVE M, PhD Robinson, D A Cerebellar Compensation of Vestibular Nystagmus Johns Hopkins University Baltimore, Maryland	5 F32 EY05070-02	892	07/01/76-06/30/77	11,900	0	23,400
Ophthalmology						
HERTZ, BARBARA G, PhD Enroth-Cugell, Christina Cortical Correlates of Psychophysical Masking Northwestern University Evanston, Illinois	5 F32 EY05015-02	893	06/01/76-05/31/77	11,200	3,000	22,000
Electrical Engineering						
HODOS, WILLIAM, PhD Keating, Michael J Physiological Analysis of Binocular Interaction Medical Research Council London, United Kingdom	1 F32 EY05170-01	894	07/01/76-	14,017	0	14,017
HUGHES, HOWARD C, PhD Sprague, James M Role of Tectum and Commissure in Attention-Perception University of Pennsylvania Philadelphia, Pennsylvania	1 F32 EY05130-01	895	12/01/76-11/30/77	10,000	3,000	10,000
Anatomy						
JOHNSON, CHRIS A, PhD Enoch, Jay M Psychophysical Methods Applied to Visual Field Testing University of Florida Gainesville, Florida	1 F32 EY05160-01	896	01/01/77-	11,500	3,000	11,500
Ophthalmology						

Name of Fellow, Degree Sponsor Project Title Sponsoring Institution City and State	Fellowship Number	Entry Number		Current Support Period	FY 1976 Stipends	FY 1976 Other Allow- ances	Costs Recom- mended For Project Period
LAND, PETER W, BS Lund, R D Factors Influencing the Development of Visual Pathways University of Washington Seattle, Washington	1 F32 EY05185-01	897		01/01/77-	10,000	3,000	31,200
LEEPER, HAROLD F, PhD Brown, Kenneth Morphology and Physiology University of California, Los Angeles Los Angeles, California	1 F32 EY05153-01	898		01/01/77-	10,000	0	20,400
LOSHIN, DAVID S, OD Fry, Glenn A Mechanisms Involved in Amblyopia Ohio State University Columbus, Ohio	5 F32 EY05038-02	899		07/01/76-06/30/77	10,400	3,000	20,400
MOONEY, RICHARD D, BA Dubin, Mark W Excitation and Inhibition in the Visual System University of Colorado Boulder, Colorado	1 F32 EY05067-01	900		07/19/76-07/18/77	*		20,400
MOSKOWITZ-COOK, ANNE F, PhD Siegfried, John B Development of Visual Capacity in Human Infants Pennsylvania College of Optometry Philadelphia, Pennsylvania	1 F32 EY05106-01	901		05/01/76-04/30/77	11,500	3,000	23,400
NAGY, ALLEN L, PhD Krantz, David Stimulus Duration and the Bezold-Brucke Effect University of Michigan Ann Arbor, Michigan	2 F32 EY05083-02	902		09/01/76-08/31/77	11,500	3,000	23,400
OCHS, ALFRED L, PhD Stark, Lawrence A Clinical Test of Eye Movement Models University of California, San Francisco San Francisco, California	5 F32 EY05037-02	903		07/01/76-06/30/77	13,600	3,000	26,800
OWENS, DONALD A, PhD Held, Richard The Development of Visual Accommodation Massachusetts Institute of Technology Cambridge, Massachusetts	1 F32 EY05177-01	904		09/07/76-09/06/77	10,000	3,000	31,200
POLLACK, JAY G, PhD Sparks, David Anatomical Projections of Eye Movement Neurons in PRF University of Alabama in Birmingham Center for Development and Learning Disorders Birmingham, Alabama	1 F32 EY05112-01	905		06/28/76-06/27/77	10,800	3,000	22,000
RONNER, STEVEN F, PhD Mansfield, Richard J Orientation Selectivity in the Monkey Visual Cortex Harvard University Cambridge, Massachusetts	5 F32 EY05075-02	906		07/01/76-06/30/77	10,400	3,000	20,400
SCHECHTER, PAUL B, PhD Pokorny, Joel M Psychophysical Correlates of Tonic and Phasic Activity University of Chicago Chicago, Illinois	1 F32 EY05134-01	907		09/01/76-	10,000	3,000	20,400
SCHWEITZER-TONG, DAN E, PhD Kozak, W Intensity/Adaptation Coding in the Cat's Visual System Carnegie-Mellon University Pittsburgh, Pennsylvania	1 F32 EY05062-01	908		08/04/76-08/03/77			31,200



Name of Fellow, Degree Sponsor Project Title Sponsoring Institution City and State	Fellowship Number	Serial Number	Current Support Period	FY 1976 Stipends	FY 1976 Other Allowances	Costs Recommended For Project Period
SHATZ, CARLA J, PhD Rakic, Pasko Development of Interhemispheric Visual Connections Harvard University Boston, Massachusetts	1 F32 EY05172-01	909	09/01/76-08/31/77	10,000	3,000	31,200
SHINGLEDECKER, CLARK A, PhD Foulke, Emerson The Analysis of Blind Mobility Performance University of Louisville Perceptual Alternatives Laboratory Louisville, Kentucky	1 F32 EY05135-01	910	09/01/76-	10,000	3,000	10,000
SIMON, LYNN G, PhD Abramov, Israel Metacontrast: A Neurophysiological Approach Brooklyn College New York, New York	5 F32 EY05058-02	911	07/01/76-06/30/77	10,400	3,000	20,400
SMITH, EARL, III, PhD Cool, Steven J An Investigation of Anisometropic Amblyopia in Cats University of Houston Houston, Texas	1 F32 EY05168-01	912	09/01/76-	12,200	3,000	24,800
TIEMAN, SUZANNAH A, PhD Ralston, Henry J, III Anatomical Effects of Monocular Visual Deprivation University of California, San Francisco San Francisco, California	1 F32 EY05164-01	913	07/01/76-06/30/77	11,500	3,000	11,500
TURKEL, JOSEPH, PhD Wallman, Joshua Developmental Plasticity in the Visual System City College of New York New York, New York	1 F32 EY05179-01	914	10/01/76-09/30/77	11,500	3,000	11,500
UNGERLEIDER, LESLIE G, PhD Mishkin, Mortimer Visual Functions of the Inferotemporal Cortex National Institute of Mental Health Bethesda, Maryland	4 F32 EY05009-02	915	09/01/76-02/28/77	6,400	0	19,400
WILSON, ROBERT S, PhD Waterman, Talbot H Information Processing by the Crustacean Visual System Yale University New Haven, Connecticut	1 F32 EY05035-01	916	09/01/76-08/31/77	*	3,000	20,400
WINTERSON, BARBARA J, PhD Collewijn, Han OKN Pathways in the Rabbit Erasmus University of Rotterdam Rotterdam, Netherlands	1 F32 EY05138-01	917	09/01/76-	10,745	3,000	20,400
WUNK, DANIEL F, PhD Freeman, John A Sensory Information Processing in the Optic Tectum Vanderbilt University Nashville, Tennessee	1 F32 EY05139-01	918	09/01/76-	10,000	3,000	20,400
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Total Active Awards for Program: 36			Total Dollars for Program:			
Total Awards for Program Receiving FY 1976 Funds: 33				346,212	84,000	752,500

\*Prior year funding

Those fellowships listed without complete budget dates have not been activated at this time; however FY 1976 money has been allocated to them.

Awardee Project Title Institution Department City and State	Grant Number	Entry Number	Current Budget Period Project Period	FY 1976 Direct Costs	Direct Costs Recom- mended for Project Period
<b>NATIONAL EYE INSTITUTE RESEARCH CAREER DEVELOPMENT AWARDS ACTIVE FY 1976</b>					
<b>A. Retinal and Choroidal Diseases</b>					
BERSON, ELIOT L Electrophysiological Studies of Retinal Degenerations Harvard University Ophthalmology Boston, Massachusetts	5 K04 EY70800-03	919	06/01/76-05/31/77 06/01/74-05/31/79	25,000	100,000
Chappell, Richard L A Study of Neural Interactions of the Retina Hunter College Biological Sciences New York, New York	1 K04 EY00040-01	920	09/24/76-09/23/77 09/24/76-09/23/81	25,000	25,000
CORLESS, JOSEPH M X-Ray, Electron Microscope and Freeze Fracture Studies on Disk Membranes Duke University Anatomy Durham, North Carolina	1 K04 EY00016-01	921	06/01/76-05/31/77 06/01/76-05/31/81	21,877	105,477
CUSANOVICH, MICHAEL A Biological Electron Transport/Visual Process University of Arizona Chemistry Tucson, Arizona	5 K04 EY00013-02	922	06/01/76-05/31/77 06/01/75-05/31/80	21,972	102,080
EBREY, THOMAS G Mechanism of Visual Excitation University of Illinois, Urbana Physiology and Biophysics Urbana, Illinois	5 K04 EY00025-02	923	08/21/76-08/20/77 08/21/75-08/20/78	25,000	85,000
HENDRICKSON, ANITA E Development of Primate Retina University of Washington Ophthalmology Seattle, Washington	5 K04 EY39039-02	924	07/01/76-06/30/77 07/01/74-06/30/79	25,000	110,615
HOLLYFIELD, JOE G Development of the Retina and Pigment Epithelium Columbia University Ophthalmology New York, New York	5 K04 EY00023-02	925	07/01/76-06/30/77 07/01/75-06/30/80	25,000	125,000
LaVAIL, MATTHEW M Cellular Mechanisms of Inherited Retinal Degeneration University of California, San Francisco Anatomy San Francisco, California	7 K04 EY70871-02	926	07/01/76-06/30/77 07/01/76-06/30/79	25,000	75,000
PAPERMASTER, DAVID S Membrane Biosynthesis in Retina Yale University Pathology New Haven, Connecticut	5 K04 EY00017-02	927	07/01/76-06/30/77 07/01/75-06/30/80	25,000	125,000
PINTO, LAWRENCE H Photoreceptor Signal Generation Purdue University Biological Sciences West Lafayette, Indiana	5 K04 EY00009-02	928	07/01/76-06/30/77 07/01/75-06/30/80	24,200	103,200
PROENZA, LUIS M Electrophysiology of Retinal Cells in Vision University of Georgia Psychology Athens, Georgia	1 K04 EY00042-01	929	09/01/76-08/31/77 09/01/76-08/31/81	19,704	98,520
SOKOL, SAMUEL Electrophysiological Indices of Photopic Mechanisms New England Medical Center Hospital Ophthalmology Boston, Massachusetts	5 K04 EY70275-02	930	04/01/76-03/31/77 04/01/74-03/31/79	25,000	115,000
Total Awards for Program: 12			Total Dollars for Program:	262,753	1,144,892

Awardee Project Title Institution    Department City and State	Grant Number	Entry Number	Current Budget Period Project Period	FY 1976 Direct Costs	Direct Costs Recom- mended for Project Period
<b>B. Corneal Diseases</b>					
Church, Robert L Biology and Genetics of Procollagen Eye and Ear Hospital of Pittsburgh    Ophthalmology Pittsburgh, Pennsylvania	1 K04 EY000071-01	931	09/30/76-09/29/81 09/30/76-09/29/81	25,000	125,000
FISCHBARG, JORGE Water and Electrolyte Transport by Corneal Endothelium Columbia University    Ophthalmology New York, New York	5 K04 EY00006-02	932	07/01/76-06/30/77 07/01/75-06/30/80	25,000	122,500
LAING, RONALD A Measurement of Retinal A-V O <sub>2</sub> Difference Boston University    Ophthalmology Boston, Massachusetts	5 K04 EY28936-02	933	06/01/76-05/31/77 06/01/74-05/31/79	25,000	125,000
MEYERS, ROBERTA L Immunology and Immunopathology of Corneal Disease University of California, Los Angeles Jules Stein Eye Institute Los Angeles, California	5 K04 EY00014-02	934	06/30/76-06/29/77 06/30/75-06/29/80	25,000	125,000
MINDEL, JOEL S Cholinergic System of the Eye Mount Sinai School of Medicine    Pharmacology New York, New York	5 K04 EY70959-02	935	01/01/76-12/31/76 07/01/74-12/31/79	25,000	125,000
Total Awards for Program: 4			Total Dollars for Program: 100,000		497,500

<b>C. Cataract</b>					
CHYLACK, LEO T, JR Lens Metabolism and Cataract Formation Harvard University    Ophthalmology Boston, Massachusetts	5 K04 EY00034-02	936	08/01/76-07/31/77 08/01/75-07/31/80	25,000	125,000
POKORNY, JOEL M An Analysis of Normal and Defective Color Vision University of Chicago    Ophthalmology Chicago, Illinois	5 K04 EY70652-02	937	06/01/76-05/31/77 06/01/74-05/31/79	25,000	105,000
YU, NAI-TENG New Methods for Biomedical Research Georgia Institute of Technology School of Chemistry Atlanta, Georgia	1 K04 EY00073-01	938	07/01/76-06/30/77 07/01/76-06/30/81	22,400	112,000
Total Awards for Program: 3			Total Dollars for Program: 72,400		342,000

<b>D. Glaucoma</b>					
ERNEST, J TERRY Pathogenesis of Glaucomatous Optic Nerve Disease University of Chicago    Ophthalmology Chicago, Illinois	5 K04 EY70633-04	939	01/01/76-12/31/76 01/01/73-12/31/77	25,000	125,000
NEUFELD, ARTHUR H Regulation of Aqueous Humor Dynamics Yale University    Ophthalmology and Visual Sciences New Haven, Connecticut	1 K04 EY00029-01	940	06/01/76-05/31/77 06/01/76-05/31/81	23,305	108,053

Awardee Project Title Institution Department City and State	Grant Number	Entry Number	Current Budget Period Project Period	FY 1976 Direct Costs	Direct Costs Recom- mended for Project Period
Van Buskirk, E Michael The Vertebrate Eye: Studies in Aqueous Outflow Pennsylvania State University Hershey Medical Center Surgery Hershey, Pennsylvania	1 K04 EY00051-01	941	08/01/76-07/31/77 08/01/76-07/31/81	25,000	125,000
Total Awards for Program: 2			Total Dollars for Program: 48,305		233,053

## E. Sensory and Motor Disorders of Vision

FREEMAN, JOHN A Optic Tectum: A Combined Structural and Functional Study Vanderbilt University Anatomy Nashville, Tennessee	5 K04 EY70240-05	942	07/01/76-06/30/77 07/01/72-06/30/77	25,000	120,750
HIGHSTEIN, STEPHEN M Oculomotor Synaptic Linkage/CNS Synaptic Transmission Yeshiva University Neuroscience New York, New York	5 K04 EY00003-02	943	07/01/76-06/30/77 07/01/75-06/30/80	25,000	125,000
KERTESZ, ANDREW E Investigation of Human Fusional Response Northwestern University Electrical Engineering Evanston, Illinois	5 K04 EY70887-02	944	07/01/76-06/30/77 07/01/74-06/30/79	25,000	113,335
OYSTER, CLYDE W Neural Interactions in the Retina and Visual Pathways University of Alabama in Birmingham Physiological Optics Birmingham, Alabama	5 K04 EY00033-02	945	07/01/76-06/30/77 07/01/75-06/30/80	23,479	110,750
SHERMAN, S MURRAY Mammalian Visual Development and Amblyopia University of Virginia Physiology Charlottesville, Virginia	5 K04 EY00020-02	946	07/01/76-06/30/77 07/01/75-06/30/80	25,000	110,000
STUART, ANN E Synaptic Transmission Harvard University Neurobiology Boston, Massachusetts	5 K04 EY70985-03	947	07/01/76-06/30/77 07/01/74-06/30/79	21,000	72,000
Total Awards for Program: 6			Total Dollars for Program: 144,479		651,835

## NATIONAL EYE INSTITUTE ACADEMIC INVESTIGATOR AWARDS ACTIVE FY 1976

## A. Retinal and Choroidal Diseases

COSTELLO, MARTIN J, III X-Ray and Freeze-Fracture Studies on Disk Membranes Duke University Anatomy Durham, North Carolina	5 K07 EY00035-02	948	08/01/76-07/31/77 08/01/75-07/31/78	24,080	72,538
FELBERG, NORMAN T Immunologic Investigation of Ocular Malignancies Wills Eye Hospital Molecular Biology Philadelphia, Pennsylvania	5 K07 EY00032-02	949	07/01/76-06/30/77 07/01/75-06/30/78	29,030	80,463
FOSTER, MARGARET C Biophysical Studies of Visual Receptors University of California, San Diego Biology La Jolla, California	5 K07 EY00027-02	950	08/01/76-07/31/77 08/01/75-07/31/78	28,934	86,570

Awardee Project Title Institution      Department City and State	Grant Number	Entry Number	Current Budget Period Project Period	FY 1976 Direct Costs	Direct Costs Recom- mended for Project Period
SAARI, JOHN C Retinol Binding Proteins: Metabolism and Function University of Washington      Ophthalmology Seattle, Washington	1 K07 EY00043-01	951	06/01/76-05/31/77 06/01/76-05/31/79	24,150	72,450
WELEBER, RICHARD G Linkage Studies in Ocular Disease University of Oregon Health Sciences Center Ophthalmology Portland, Oregon	5 K07 EY00022-02	952	07/01/76-06/30/77 07/15/75-06/30/78	30,000	82,500
ZWAS, FRED Psychophysical Studies of Retinitis Pigmentosa Wayne State University      Ophthalmology Detroit, Michigan	1 K07 EY00045-01	953	08/01/76-07/31/77 08/01/76-07/31/79	24,400	75,600
Total Awards for Program: 6			Total Dollars for Program: 160,594		470,121
B. Corneal Diseases					
MCCAREY, BERNARD E Corneal Endothelial Morphology and Function University of Florida      Ophthalmology Gainesville, Florida	1 K07 EY00031-01A1	954	06/01/76-05/31/77 06/01/76-05/31/79	30,000	90,000
Total Awards for Program: 1			Total Dollars for Program: 30,000		90,000
C. Glaucoma					
GREGORY, DOUGLAS S Control of Aqueous Humor Formation Yale University      Ophthalmology and Visual Sciences New Haven, Connecticut	5 K07 EY00037-02	955	07/01/76-06/30/77 07/01/75-06/30/78	28,672	87,002
KLEINSTEIN, ROBERT N Eye Disorders in an Urban Population University of Alabama in Birmingham      Optometry Birmingham, Alabama	1 K07 EY0026-01A1	956	09/01/76-08/31/77 09/01/76-08/31/77	27,865	27,865
Total Awards for Program: 2			Total Dollars for Program: 56,537		114,867
D. Sensory and Motor Disorders of Vision					
HARWERTH, RONALD S Studies of Binocular Vision University of Houston Basic and Optometric Sciences Houston, Texas	1 K07 EY00052-01	957	09/01/76-08/31/77 09/01/76-08/31/79	31,339	92,339
Total Awards for Program: 1			Total Dollars for Program: 31,339		91,339





# Research Sponsored by Other Organizations

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Projects with  
Direct Relevance to  
the National Eye Institute  
Program

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## I. Retinal and Choroidal Diseases





# I. Retinal and Choroidal Diseases

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) EXTRAMURAL RESEARCH FUNDING			
National Cancer Institute	ATKINS, H L Melanoma Detection with Radiopharmaceuticals Brookhaven National Laboratory Upton, New York	958	38,353
	ELLSWORTH, R M Retinoblastoma—Chemotherapeutic Research Columbia University New York, New York	959	37,384
	ELLSWORTH, R M Malignant Melanoma of the Uvea Columbia University New York, New York	960	37,384
	ELLSWORTH, R M Angiomatous Tumors Columbia University New York, New York	961	37,384
	ELLSWORTH, R M Retinoblastoma Columbia University New York, New York	962	37,384
	GALLIE, B L Immunology and Spontaneous Regression in Retinoblastoma Memorial Hospital New York, New York	963	29,847
	GOOD, R A Immunologic and Genetic Aspects of Retinoblastoma Memorial Hospital New York, New York	964	81,712
	GRAGOUDAS, E S Proton Therapy of Eye Tumors Eye Research Institute of Retina Foundation Boston, Massachusetts	965	83,023
	KITCHIN, F D Chromosome and Cytologic Studies in Retinoblastoma Columbia University New York, New York	966	37,384
	SIGDESTAD, C R Radiation Protectors as an Adjunct to Radiotherapy University of Louisville Louisville, Kentucky	967	27,130
	SPENCER, R P Eye Studies with Radionuclides University of Connecticut Farmington, Connecticut	968	120,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Cancer Institute (Cont'd)	SWAMINATHAN, R Optic Gliomas — Natural History and Response to Radiation Therapy University of Chicago School of Medicine Chicago, Illinois	969	279,100
National Heart, Lung, and Blood Institute	CHIPAULT, J R Dietary Fats on Lipids of Retina University of Minnesota Austin, Minnesota	970	24,119
	COWLEY, R M Inert Gas Exchange and Isobaric Gas Counter-Diffusion in the Eye University of Pennsylvania Philadelphia, Pennsylvania	971	57,000
	GOLDBERG, M F Ophthalmology University of Illinois Chicago, Illinois	972	57,000
	HAUGAARD, N Oxygen Effects Upon Isolated Retinal Metabolism University of Pennsylvania Philadelphia, Pennsylvania	973	57,000
	HENDRICKS, P L Inert Gas Exchange in the Eye University of Pennsylvania Philadelphia, Pennsylvania	974	8,761
	HUNTLEY, T E Platelet Fatty Acid Metabolism in Diabetes University of Minnesota Duluth, Minnesota	975	72,981
	JACKSON, R L Vascular Changes in Diabetes Mellitus University of Missouri Columbia, Missouri	976	38,440
	KWAAN, H C Urokinase for Retinal Vein Thrombosis Northwestern University Chicago, Illinois	977	17,075
	LAMBERTSON, C J Oxygen Effects on Visual Function University of Pennsylvania Philadelphia, Pennsylvania	978	8,761
	PATZ, A Role of Systemic Hypertension in Diabetic Retinopathy Johns Hopkins University Baltimore, Maryland	979	104,264
	ROCKEY, J H Effects of High Oxygen Pressures on Visual Pigment Functions University of Pennsylvania Philadelphia, Pennsylvania	980	8,761
	SPALTER, H F Fundusoscopic Mapping by Photography Columbia University New York, New York	981	39,736

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Heart, Lung, and Blood Institute (Cont'd)	ZISKIN, M C Ophthalmologic Effect of Ultrasound at Diagnostic Intensities Temple University Philadelphia, Pennsylvania	982	57,000
National Institute of Arthritis, Metabolism, and Digestive Diseases	BITENSKY, M W Macromolecular Reversible Inhibitor of Adenyl Cyclase Yale University New Haven, Connecticut	983	53,206
	BROWN, D M Islets Transplantation and Diabetic Vascular Disease University of Minnesota Minneapolis, Minnesota	984	60,202
	HU, F Development of Pigment Cells in Eyes of Rhesus Monkeys Medical Research Foundation of Oregon Portland, Oregon	985	14,000
	MEEZAN, E Glycoprotein Structure and Metabolism in Diabetes University of Arizona Tucson, Arizona	986	50,042
	SUTHERLAND, D E Pancreatic Islet Transplantation in Diabetic Patients University of Minnesota Minneapolis, Minnesota	987	71,731
	WITKOP, C J, JR Neural Visual Tract Abnormalities in Retinal Hypopigmentation University of Minnesota Minneapolis, Minnesota	988	5,572
National Institute of Neurological and Communicative Disorders and Stroke	CORLESS, J M X-Ray Diffraction Studies of Retinal Rod Outer Segment Membrane Duke University Medical Center Durham, North Carolina	989	69,000
	OGDEN, T E Vertebrate Vision Research on Catfish Retina California Institute of Technology Pasadena, California	990	54,710
	REAGAN, T J Natural History of Atherosclerosis of the Ophthalmic Artery Mayo Foundation Rochester, Minnesota	991	16,660
	ROBERTSON, J D Histochemical Studies of Retinal Rod Outer Segment Membranes Duke University Medical Center Durham, North Carolina	992	69,000
	SCHOCKET, S Retinal Circulation University of Maryland Baltimore, Maryland	993	32,000
	WILLARD, M B Axonally Transported Proteins in the Visual System Washington University St. Louis, Missouri	994	35,519

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Child Health and Human Development	BATELLE, B Protein Synthesis, in Retinal Degeneration Children's Hospital Medical Center Boston, Massachusetts	995	34,000
	BUNT, A H Ortho- and Retrograde Axonal Transport in Retinal Ganglion Cells University of Washington Seattle, Washington	996	6,539
	FUTTERMAN, S Biochemical Studies of Retina University of Washington Seattle, Washington	997	6,539
	LA VAIL, M M Retinal Development and Disease Children's Hospital Medical Center Boston, Massachusetts	998	34,000
	WELKER, C W Electrophysiology of Visual Cortex of Microencephalic Rats University of Wisconsin Madison, Wisconsin	999	11,959
National Institute of Dental Research	WERNER, I Control of Growth and Melanogenesis in Cultured Retinal Pigment Cells Harvard School of Dental Medicine Boston, Massachusetts	1000	24,414
National Institute of General Medical Sciences	DEWEY, M M Structure and Function of Biological Membranes State University of New York at Stony Brook Stony Brook, New York	1001	42,591
	DREYER, W J Rhodopsin, a Membrane Receptor Protein California Institute of Technology Pasadena, California	1002	31,346
	EAKIN, R M Studies in Fine Structure University of California, Berkeley Berkeley, California	1003	93,000
	JAN, L Distribution of Rhodopsin in Mouse Retinal Rod-Ferritin Immunolabeling California Institute of Technology Pasadena, California	1004	40,000
	LEDLEY, R S Retinal Fluorescence Cinematography Georgetown University Medical Center Washington, District of Columbia	1005	51,000
	PAPERMASTER, D Rhodopsin in the Discs of the Outer Segments of Retinal Rods Yale University New Haven, Connecticut	1006	
	REVEL, J Distribution of Rhodopsin of Mouse Rod Outer Segment Hemocyanin Immunolabeling California Institute of Technology Pasadena, California	1007	40,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of General Medical Sciences (Cont'd)	SCHELLMAN, J A Dynamic Geometry of Visual Proteins University of Oregon Eugene, Oregon	1008	8,789
	SULLIVAN, D T A Developmental and Genetic Study of a Transport System Syracuse University Syracuse, New York	1009	28,626
Division of Research Resources	BLALOCK, T Diabetic Retinopathy Emory University Atlanta, Georgia	1010	10,484
	BRUBAKER, R F Determining Rate of Leakage of Serous Fluid in Central Serous Retinopathy Mayo Foundation Rochester, Minnesota	1011	5,503
	CLARKE, D National Collaborative Diabetic Retinopathy Study University of Utah Salt Lake City, Utah	1012	7,449
	GOETZ, F C Effect of Pancreas Transplantation on Diabetic Retinopathy University of Minnesota Minneapolis, Minnesota	1013	22,718
	HAYREH, S Ocular Vascular Occlusive Disorders—Clinical Study University of Iowa Iowa City, Iowa	1014	13,802
	KRISS, J P Radiotherapy for Ophthalmopathy of Graves' Disease Stanford University Stanford, California	1015	18,777
	NEWELL, F W Retinal Profiles in Congenital Stationary Disorders University of Chicago Chicago, Illinois	1016	11,105
	NEWELL, F W Retinal Profiles in Retinal Disease and Sex-Linked Carriers University of Chicago Chicago, Illinois	1017	11,105
	NEWELL, F W Retinal Profile of Children with Low Visual Acuity University of Chicago Chicago, Illinois	1018	11,105
	NEWELL, F W Toxic Retinal Effects of Drugs Measured by Tests of Retinal Function University of Chicago Chicago, Illinois	1019	11,105
	PROUT, T E Natural History of Diabetic Retinopathy Johns Hopkins University Baltimore, Maryland	1020	10,458



150 *Research Projects of Direct Relevance to the NEI Program*

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Division of Research Resources (Cont'd)	ROBERTSON, D M Rate of Serous Fluid Leakage in Central Serous Retinopathy University of Minnesota Minneapolis, Minnesota	1021	46,000
	RUDMAN, D Diabetic Retinopathy Emory University Atlanta, Georgia	1022	10,484
	SCHEPENS, C L General Research Support (Eye) Eye Research Institute of Retina Foundation Boston, Massachusetts	1023	102,473
	STREETEN, B W Hereditary Macular Degeneration of the Retina State University of New York Syracuse, New York	1024	46,000
Total Projects for Program: 67		Total Known Funding:	7,719,996

## NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) INTRAMURAL RESEARCH PROJECTS

National Heart, Lung, and Blood Institute	DEMELLO, F Glutamic Acid Decarboxylase in Developing Chick Retina	1025	63,600
	KRISHNA, G Role of Guanine Nucleotides in Vision	1026	?
National Institute of Arthritis, Metabolism and Digestive Diseases	ADAMS, R G The Physics and Chemistry of the Visual Pigments	1027	?
	HAGINS, W A The Physical and Chemical Bases of Photoreception	1028	?
National Institute of Neurological and Communicative Disorders and Stroke	DETWILER, P B Sensory Receptors in <i>Hermisenda crassicornis</i>	1029	?
	HAROSI, F I Microspectrophotometric Studies of Vertebrate Visual Pigment in Cells and in Solutions	1030	102,000
	KOLB, H Neural Connections in Retina	1031	102,000
	NORMANN, R A Description of an Oscillatory State in the Vertebrate Retina	1032	25,500
	O'BRYAN, P M Organization of Vertebrate Retinal Neuron	1033	?
	SMITH, T G, JR Rapid Scanning Microspectrophotometry in Visual Cells	1034	66,300
Total Projects for Program: 10		Total Known Funding:	359,400

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE (EXCLUSIVE OF NIH) RESEARCH FUNDING			
Food and Drug Administration	FINE, B S Ocular Pathology from Electro-Magnetic Radiation Universities Associated for Research and Education in Pathology, Inc. Bethesda, Maryland	1036	14,704
	HAM, W T, JR Ocular Effects from Overexposure to Various Optical Sources Virginia Commonwealth University Richmond, Virginia	1037	99,093
	LAWWILL, T Retinal Damage Caused by Chronic Exposure to Light University of Louisville Louisville, Kentucky	1038	56,000
	SPERLING, H G Effects of Light on the Retina University of Texas Houston, Texas	1039	48,026
National Institute of Mental Health	DENNEY, D D Effects of Psychotropic Drugs on Retinal Function University of Oregon Portland, Oregon	1040	54,175
	RISO, R R Luxotonic Units in Central Visual System University of Rochester Rochester, New York	1041	6,900
	ZELLER, E A Electroretinograms and Retinal Dopaminergic System of the Rabbit Northwestern University Chicago, Illinois	1042	?
Total Projects for Program: 7		Total Known Funding: 278,898	
OTHER FEDERAL RESEARCH FUNDING			
Department of Agriculture	CARLSON, S D Ultrastructure of Insect Visual Systems: Morphological Identification of Photic Information Transfer University of Wisconsin Madison, Wisconsin	1043	16,693
	LITTLE, A C Recognition Techniques: Nutrition Related Retinal Dysfunction University of California, Berkeley Berkeley, California	1044	?
Department of Defense	HAM, W T Biological Applications and Effects of Optical Masers Virginia Commonwealth University Richmond, Virginia	1045	77,000
Air Force	ALLEN, R G Evaluation of Laser Eyewear for Safety U.S. Air Force School of Aerospace Medicine Brooks Air Force Base San Antonio, Texas	1046	34,000

\*This project was funded at the Department level.

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Department of Defense (Cont'd)			
Air Force (Cont'd)	BRUCKNER, A P Laser Eye Evaluation Measuring System University of Washington Seattle, Washington	1047	50,000
	GIBBONS, W D Retinal Safety Criteria for Air Force Developmental and Operational Lasers U.S. Air Force School of Aerospace Medicine Brooks Air Force Base San Antonio, Texas	1048	242,000
	GIBBONS, W D Effects of Laser Radiation on Visual Function U.S. Air Force School of Aerospace Medicine Brooks Air Force Base San Antonio, Texas	1049	45,000
	LOF, N E Eye Effects of Nuclear Detonations U.S. Air Force School of Aerospace Medicine Brooks Air Force Base San Antonio, Texas	1050	37,000
	TABOADA, J Ocular Safety Criteria for Developmental and Operational Ultrashort Pulse Air Force Lasers U.S. Air Force School of Aerospace Medicine Brooks Air Force Base San Antonio, Texas	1051	43,000
	WELCH, A J Correlation of Temperature Rise to Laser Eye Injury for Predictive Safety Models University of Texas Austin, Texas	1052	43,600
	WELCH, A J Measurements in the Laser Irradiated Eye University of Texas Austin, Texas	1053	3,754
	WOLBARSH, M L Determination of Retinal Sensitivity to Color Intensity Following Intense Monochromatic Light Adaptation by Electrophysiology Technique Duke University Durham, North Carolina	1054	43,800
Armed Forces Institute of Pathology	FRANK, K Light and Electron Microscopic Study of Retinal Tumors Intramural Project	1055	12,000
	McLEAN, I W Risk Factors in the Lipid Malignant Melanoma of Choroid and Ciliary Body Intramural Project	1056	1,548
Army	GALLEGO, A A Study by Light and Electron Microscopy of the Neural Basis for Diurnal and Nocturnal Vision University of Madrid Madrid, Spain	1057	10,000
	LAMBERT, R H Human Eye Movements as Related to Visual Search, Information Extraction and Target Detection DARCOM Human Engineering Research Laboratory Aberdeen, Maryland	1058	75,000
	LAWWILL, T Mechanisms of Retinal Damage from Chronic Laser Radiation University of Louisville Louisville, Kentucky	1059	56,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Department of Defense (Cont'd)			
Army (Cont'd)	McGOWAN, J W Laser Induced Damage in the Eye University of Western Ontario Ontario, Canada	1060	50,000
	MILLER, N D An Experimental Investigation of the Effect of 1.06 M. Laser Light on the Transparent Ocular Media Technology, Inc. San Antonio, Texas	1061	49,464
	ROBBINS, D O Functional Assessment of Laser Irradiation Ohio Wesleyan University Delaware, Ohio	1062	20,000
Navy	CASTANY, M A Navy Environment: Study of Retinal Metabolism of the Isolated Bovine Eye Perfused with Fresh and Stored Blood Eye Research Institute of Retina Foundation Boston, Massachusetts	1065	115,000
	WOLBARSH, M L Navy Environment: Laser Injury in Human Eyes Duke University Durham, North Carolina	1066	19,500
Energy Research and Development Administration	GUZZO, A V Photo-Initiated Processes in Vision University of Wyoming Laramie, Wyoming	1067	21,753
	RUSHTON, W A Transmission of Signals Through Human Retina State University of Florida Tallahassee, Florida	1068	7
National Science Foundation	ALFANO, R R Photosynthetic and Photovisual Processes Probed Directly with Picosecond Laser Pulses City University of New York New York, New York	1069	60,000
	CALLENDER, R Resonant Raman Studies of Rhodopsin City University of New York New York, New York	1070	24,000
	CANDEUB, L Symposium on Interactions in Ocular Development, October 23-25, 1975 Pennsylvania College of Optometry Philadelphia, Pennsylvania	1071	3,300
	FERNANDEZCOSSIO, H R Vision in the Deep-Sea Environment — Spectral Sensitivity and Visual Pigments University of Southern California Los Angeles, California	1072	22,500
	HAILMAN, J P Phototaxis and Interacting Visual Processes in Behavior University of Wisconsin, Madison Madison, Wisconsin	1073	22,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Science Foundation (Cont'd)	KAPLAN, M W Retinal Photoreceptor Cell Function Good Samaritan Hospital Medical Center Portland, Oregon	1074	35,000
	LOLLEY, R N Cyclic GMP Metabolism in Normal and Degenerative Retina University of California, Los Angeles Los Angeles, California	1075	34,800
	PAUTLER, E L Transretinal Potential and Sugar Transport in Mammals Colorado State University Fort Collins, Colorado	1076	22,500
	PUGH, E N Mechanisms of Color Vision University of Pennsylvania Philadelphia, Pennsylvania	1077	10,000
	SJOSTRAND, F S Circuitry of the Retina University of California, Los Angeles Los Angeles, California	1078	43,200
	SPERLING, H G Long-Term Retinal Effects of Intense Spectral Light Exposure University of Texas Houston, Texas	1079	39,400
	WILLIAMS, T P Role of Lipids in Rhodopsin Bleaching State University of Florida Tallahassee, Florida	1080	32,100
Veterans Administration	COHEN, M Experimental Hematogenous Candida Endophthalmitis Veterans Administration Center Los Angeles, California	1081	11,200
	DAVIDORF, F H Immunology of Malignant Melanoma of the Choroid Veterans Administration Outpatient Clinic Columbus, Ohio	1082	11,200
	LOLLEY, R N Maturation of the Metabolic Capacity of the Normal and Dystrophic Retina Veterans Administration Hospital Sepulveda, California	1083	11,200
	LOLLEY, R N Retinal Metabolism and Visual Function Veterans Administration Hospital Sepulveda, California	1084	11,200
	MARMOR, M F Interaction Between Retina and Pigment Epithelium Veterans Administration Hospital Palo Alto, California	1085	11,200
	PILKERTON, A R Eye Membrane Research Veterans Administration Hospital Washington, District of Columbia	1086	11,200
	PILKERTON, A R Retinal Changes in Hemodialysis Patients Veterans Administration Hospital Washington, District of Columbia	1087	11,200



Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Veterans Administration (Cont'd)	TSAPOGAS, M J Thrombolytic Therapy in Retinal Vascular Occlusion Veterans Administration Hospital Albany, New York	1088	11,200
	VANHORN, D L Effects of Sulfur Hexafluoride Gas in the Eye Veterans Administration Center Wood, Wisconsin	1089	11,200
	VANHORN, D L Experimental Vitreal Membranes Veterans Administration Center Wood, Wisconsin	1090	11,200
Total Projects for Program: 46		Total Known Funding:	1,526,912

## NATIONAL PHILANTHROPIC AND VOLUNTARY AGENCY RESEARCH FUNDING

American Cancer Society	CROCE, C M Genetics of Human Retinoblastoma The Wistar Institute Philadelphia, Pennsylvania	1091	100,000
	McCLAY, D R Retina and Cerebral Cell-Surface-Specific Glycoproteins Duke University Durham, North Carolina	1092	71,593
Estelle Doheny Eye Foundation	OGDEN, T E A Study of Structure and Function of Retinal Neurons Intramural Project	1093	32,269
	OGDEN, T E Nonlinear Analysis of Retinal Potentials Intramural Project	1094	33,250
	WARD, D E Doheny Eye Bank Research Intramural Project	1095	21,000
Charles E. Hood Foundation	MUKAI, N To Further Understanding, Prevention, and Treatment of Retinoblastoma Eye Research Institute of Retina Foundation Boston, Massachusetts	1096	11,532
Council for Tobacco Research, U.S.A., Inc.	INGENITO A J Actions of Carbon Monoxide and Tobacco Smoke on Retinal Metabolism and Function Union College and University Albany, New York	1098	24,815
Eye Bank for Sight Restoration	Ultra-Sound Equipment Intramural Project	1099	9,000
Fight for Sight, Inc.	CHAR, D H Eye Tumors — Immunodiagnosis, Monitoring, and Therapy University of California, San Francisco San Francisco, California	1100	10,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Fight for Sight, Inc. (Cont'd)	CORNWELL, A C Electrophysiological and Neurochemical Changes in the Retina Following Monocular Visual Deprivation Montefiore Hospital and Medical Center New York, New York	1101	2,000
	DYER, R S Effects of Carbon Monoxide and Hypoxia on the Visual System Johns Hopkins University Baltimore, Maryland	1102	4,050
	FRAYSER, R Branched Chain Amino Acid Metabolism by the Isolated Retina Medical University of South Carolina Charleston, South Carolina	1103	7,000
	GALLIE, B L Immunity and Spontaneous Regression in Retinoblastoma Memorial Sloan-Kettering Cancer Center New York, New York	1104	4,000
	GALLIN, P Fluorescein Angiography of the Anterior Segment in Patients City University of New York New York, New York	1105	600
	HALL, M O Studies on the Molecular Basis of Retinal Degeneration in RCS Rat University of California, Los Angeles Los Angeles, California	1106	5,000
	HUNTLEY, C Ocular Toxocariasis — Development of Diagnostic Tests Wake Forest University Winston-Salem, North Carolina	1107	4,000
	JOHNS, P Retinal Growth in Adult Goldfish University of Michigan Ann Arbor, Michigan	1108	600
	LEEPER, H F Correlation of Cytoarchitecture and Physiological Response in the Retina of Ambystoma Tigrinum University of California, Los Angeles Los Angeles, California	1109	900
	MAUMENEE, I H Treatment of Retinal Degeneration Johns Hopkins University Baltimore, Maryland	1110	5,000
	MEHAFFEY, L The Role of Outer Segment Turnover in Retinal Degeneration Vassar College Poughkeepsie, New York	1111	700
	MILJANICH, G P Studies of Molecular Organization of the Lipids in the Rod Outer Segment Disk Membrane University of California, Santa Cruz Santa Cruz, California	1112	1,050
	NEMES, P Studies of the Molecular Organization of the Rod Outer Segment Disk Membrane University of California, Santa Cruz Santa Cruz, California	1113	900

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Fight for Sight, Inc. (Cont'd)	OHNO, S Immunogenetic Studies on Idiopathic Uveitis University of California School of Medicine, San Francisco San Francisco, California	1114	4,980
	RABKIN, M Permeability Studies of the Retinal Vasculature in Experimentally-Produced Retinopathies Albert Einstein College of Medicine Bronx, New York	1115	600
	ROBERTSON, G A Biochemical Studies of Hereditary Retinal Degeneration in Dogs University of Pennsylvania Philadelphia, Pennsylvania	1116	900
	SCHWARTZ, E A Synaptic Interaction Between Photoreceptors in the Vertebrate Retina Cambridge University Cambridge, England	1117	5,000
	SCHWARTZ, S Testing the Calcium-Coupling Hypothesis Between Light Absorption and Electrical Response of Dark Adapted Retinal Rod Outer Segments University of California, Santa Cruz Santa Cruz, California	1118	4,000
	SHABO, A L Experimental Immunogenic Pars Planitis University of California, Los Angeles Los Angeles, California	1119	4,000
	SPECTOR, S Study of Ocular Dynamics Using Radioisotopes University of Florida Gainesville, Florida	1120	7,000
	STERN, W H Treatment of Experimental Retinal Edema Veterans Administration Hospital San Francisco, California	1121	5,000
	THIBOS, L Quantitative Analysis of Control of Retinal Sensitivity University of California, Berkeley Berkeley, California	1122	900
	VYGANTAS, C M Diabetic Retinopathy in the Primate University of Illinois School of Medicine Chicago, Illinois	1123	2,880
	WAINSTOCK, M A Ultrasound Guided-Gamma-Ray Probe University of Michigan Ann Arbor, Michigan	1123a	2,700
	WICKHAM, M G Studies on Argon Laser Trabeculotomy University of California School of Medicine, San Diego La Jolla, California	1124	3,000
Helena Rubinstein Foundation, Inc.	PATZ, A Development of Inhibitors of Abnormal Blood Vessel Growth in Diabetic Retinopathy Johns Hopkins University Baltimore, Maryland	1125	25,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Juvenile Diabetes Foundation	BRANSON, R E Collagen Proteins Synthesized by Cultured Fibroblasts from Normal and Diabetic Subjects and the Relationship of Those Proteins to Diabetic Microangiopathy Vanderbilt University Nashville, Tennessee	1126	11,000
	COLWELL, J A Platelet Aggregation, Growth Hormone and von Willebrand Factor Activity in Juvenile Onset Diabetic Subjects Medical University of South Carolina Charleston, South Carolina	1127	14,280
	FRANK, R N Tissue Culture and Enzyme Studies of Retinal Microvessels Wayne State University Detroit, Michigan	1128	35,953
	GABBAY, K H Aldose Reductase Inhibition in the Therapy of Diabetes Mellitus Children's Hospital Medical Center Boston, Massachusetts	1129	34,441
	MEEZAN, E Basement Membranes of the Eye in Diabetic Retinopathy University of Arizona Tucson, Arizona	1130	24,310
	ORLOFF, M J Effect of Whole Pancreas Transplantation on Pathology of Diabetes University of California, San Diego La Jolla, California	1131	27,607
	WALLOW, J H L The Blood-Retinal Barrier in Experimental Diabetic Retinopathy University of Wisconsin Madison, Wisconsin	1132	16,060
The Moody Foundation	McPHERSON, A Applications of Computer Processing B-Scanned Ultra Sound to Clinical Ophthalmology Retina Research Foundation Houston, Texas	1133	14,000
National Retinitis Pigmentosa Foundation, Inc.	ANDERSON, R E The Effects of DMSO on Retinal Degeneration in the RCS Rat Baylor College of Medicine Houston, Texas	1134	3,000
	ARMSTRONG, D Peroxide-Lipopigment Interaction in Retinal Degeneration of the English Setter University of Colorado Boulder, Colorado	1135	25,000
	BERSON, E Berman-Gund Laboratory for the Study of Retinal Degeneration Harvard Medical School Boston, Massachusetts	1136	145,482
	FISHMAN, G Hereditary Retinal Degeneration in a Primate University of Illinois Hospital Chicago, Illinois	1137	17,065
	McGINNIS, J S Enzymatic Correlates of Hereditary Retinal Degeneration University of California, Los Angeles Los Angeles, California	1138	17,234

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Retinitis Pigmentosa Foundation, Inc. (Cont'd)	NANCE, W E Genetics of Retinitis Pigmentosa Medical College of Virginia Richmond, Virginia	1139	1,609
	ROSEN, J Clinical Electroretinography Massachusetts Eye and Ear Infirmary Boston, Massachusetts	1140	4,250
	SIKOTOS, A N Lipofuscin and Other Lipid Inclusions in Pigment Epithelial Cells Indiana University School of Medicine Indianapolis, Indiana	1141	16,376
	SCIENTIFIC ADVISORY BOARD Acquisition and Care of Dogs with Hereditary Retinal Degeneration Intramural Project	1142	33,800
National Society for the Prevention of Blindness, Inc.	CROUCH, R The Use of Artificial Visual Pigments for the Control of Retinitis Pigmentosa Medical University of South Carolina Charleston, South Carolina	1143	5,000
	GRAND, M G The Evaluation of Computerized Transaxial Tomography in the Diagnosis of Intraocular Malignant Melanoma Washington University St. Louis, Missouri	1144	4,433
	STERN, W Immunologic Medication of Permeability Changes in the Choroidal Capillaries, Bruch's Membrane and the Retinal Pigment Epithelium University of Chicago Chicago, Illinois	1145	5,000
	WOLF, M L The Effect of Diphenylhydantoin (DPH) on the Normal and Hypoxic Rabbit Retina Washington University St. Louis, Missouri	1146	5,000
Research to Prevent Blindness, Inc.	ANDERSON, R E Retinal Degeneration Baylor College of Medicine Houston, Texas	1147	15,000
	REID, T W Viral Causation of Human Eye Tumors Yale University New Haven, Connecticut	1148	15,000
	WONG, T W Role of Rhodopsin in Retinal Diseases Georgetown University Medical Center Washington, District of Columbia	1149	15,000
Total Projects for Program: 59		Total Known Funding:	921,119





## II. Corneal Diseases



## II. Corneal Diseases

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) EXTRAMURAL RESEARCH FUNDING			
National Cancer Institute	DISCHE, Z Polysaccharides in Neoplastic Diseases Columbia University New York, New York	1189	22,596
	JACOBIE, F A Electron Microscopy of Orbital and Adnexal Tumors Columbia University New York, New York	1190	37,384
National Institute of Allergy and Infectious Diseases	GROGAN, J B Anterior Chamber Implants and Transplantation Immunology University of Mississippi Jackson, Mississippi	1191	47,119
	SCHACHTER, J Eye Disease and Venereally-Transmitted Chlamydial Disease University of California, San Francisco San Francisco, California	1192	38,703
National Institute of Child Health and Human Development	HAY, E D Role of Extracellular Matrix in Morphogenesis Harvard Medical School Boston, Massachusetts	1193	101,993
	WATSON, R R Malnutrition and Secretory Immunoglobulin A Indiana University Indianapolis, Indiana	1194	22,139
National Institute of General Medical Sciences	POLACK, F M Artificial Corneas University of Florida Gainesville, Florida	1195	25,452
Division of Research Resources	JONES, D B Pathogenesis and Therapy of Ocular Cicatrical Pemphigoid Baylor College of Medicine Houston, Texas	1196	17,272
	NICHOLS, R L Trachoma Agent in Primates Harvard Medical School Boston, Massachusetts	1197	25,498
	ROBERTS, W Investigation of Family with Lattice Corneal Dystrophy and Ehlers-Danlos Syndrome University of Colorado Medical Center Denver, Colorado	1198	16,171
Total Projects for Program: 10		Total Known Funding:	354,327

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
<b>NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) RESEARCH CONTRACT FUNDING</b>			
National Institute of Allergy and Infectious Diseases	GALIN, M A Interferon Inducers in Herpetic Infections of the Eye New York Medical College New York, New York	1199	37,716
Total Projects for Program: 1		Total Known Funding:	37,716
<b>NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) INTRAMURAL RESEARCH PROJECT</b>			
Division of Research Services	BAAS, E J Mycoplasma Induced Caprine Keratoconjunctivitis	1200	5,000
Total Projects for Program: 1		Total Known Funding:	5,000
<b>DEPARTMENT OF HEALTH, EDUCATION AND WELFARE (EXCLUSIVE OF NIH) RESEARCH FUNDING</b>			
Food and Drug Administration	WILSON, L Microbial Contamination of the Eye as Related to the Use of Mascara Emory University Atlanta, Georgia	1201	67,000
Total Projects for Program: 1		Total Known Funding:	67,000
<b>OTHER FEDERAL RESEARCH FUNDING</b>			
Consumer Product Safety Commission	SEABAUGH, V M A Comparative Study of Rabbit Ocular Reactions to Various Exposure Times to Chemicals Intramural Project	1202	30,000
	WRIGHT, P L Effects of Model Eye Irritants on Corneal Proteins and Water Content Intramural Project	1203	17,500
Department of Agriculture	HUGHES, D E Investigations of Pink Eye (Infectious Keratitis) of Cattle Iowa State University Ames, Iowa	1204	310,408
	KILLINGER, A H Ecology, Epidemiology and Control of Bovine Keratoconjunctivitis University of Illinois, Urbana Urbana, Illinois	1205	20,742
	KIRK, M D Immune Mechanism in Bovine Keratoconjunctivitis Syndrome University of Nevada Reno, Nevada	1206	7
Department of Defense			
Air Force	CONNOLLY, J Ocular Effects of Laser Radiation Technology, Inc. San Antonio, Texas	1207	203,600
	LOPER, L R Corneal and Lenticular Safety Criteria for Air Force Developmental and Operational Lasers US Air Force School of Aerospace Medicine Brooks Air Force Base San Antonio, Texas	1208	7
Armed Forces Institute of Pathology	ZIMMERMAN, L E Sebaceous Gland Carcinoma of the Eyelid and Eyebrow Intramural Project	1209	1,050



Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Department of Defense (Cont'd) Army	BEATRICE, E S Determination of Threshold Data From Coherent and Incoherent Radiation Sources Letterman Army Institute of Research San Francisco, California	1210	110,000
	BECKER, C H Dimercaprol Ophthalmic Ointment Formulation, Testing and Packaging Study University of Florida Gainesville, Florida	1211	4,000
National Science Foundation	GREER, I Fluid Flows Around Corneal Contact Lenses Case Western Reserve University Cleveland, Ohio	1212	76,000
	NOLTE, J F Photosensitive Irises University of Colorado Denver, Colorado	1213	44,900
Veterans Administration	BINDER, P S An Improved Method of Preservation of the Cornea for Transplantation Veterans Administration Hospital San Diego, California	1214	11,200
	BIZZELL, J W Multicentric Clinical Evaluation of Betamethasone Phosphate Ophthalmic Solution Veterans Administration Hospital Chicago, Illinois	1215	11,200
	CASSISI, N J Comparative Evaluation of Cortisporin Otic Solution and Cortisporin Optic Drops Veterans Administration Hospital Gainesville, Florida	1216	11,200
	CHIN, J N Laboratory Evaluation of Antifungal Agents in Mycotic Keratitis Veterans Administration Hospital Lexington, Kentucky	1217	11,200
	DURRANI, J Uveal Blood Flow and Metabolism Studied In Vivo Veterans Administration Hospital Hartford, Connecticut	1218	11,200
	EDELHAUSER, H F Pathogenesis of Corneal Edema After Cataract Surgery Veterans Administration Center Wood, Wisconsin	1219	11,200
	GUZE, L B Candida Albicans Hematogenous Endophthalmitis Veterans Administration Hospital Los Angeles, California	1220	11,200
	HALE, N P Refractive Keratoplasty Veterans Administration Hospital Palo Alto, California	1221	25,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Veterans Administration (Cont'd)	KRAMER, S G Ocular Catecholamine Function and Experimental Microsurgery Veterans Administration Hospital San Francisco, California	1222	11,200
	LEHMAN, R N Electro-Coaptation of Tissue Veterans Administration Hospital Pittsburgh, Pennsylvania	1223	11,200
	ROSE, S W Experimental Model of Hyphema Clearance/Drug Trial — Atropine, Pilocarpine Veterans Administration Hospital Lexington, Kentucky	1224	11,200
	ROSENTHAL, A R Two Methods of Dacryocystography Veterans Administration Hospital Palo Alto, California	1225	11,200
	ROSENTHAL, A R Control of Corneal Hydration Veterans Administration Hospital Palo Alto, California	1226	11,200
	SINGH, S P Etiology and Pathogenesis of Endocrine Exophthalmos Veterans Administration Hospital Downey, Illinois	1227	11,200
	VANHORN, D L Pathophysiology of Corneal Disease Veterans Administration Center Wood, Wisconsin	1228	11,200
	VANHORN, D L Surgical Evaluation of Preserved Corneas Veterans Administration Center Wood, Wisconsin	1229	11,200
	WILSON, R S Betamethasone Phosphate Ophthalmic Solution 0.1% Efficacy Veterans Administration Hospital Little Rock, Arkansas	1230	11,200
Total Projects for Program: 29		Total Known Funding:	1,022,400

## NATIONAL PHILANTHROPIC AND VOLUNTARY AGENCY RESEARCH FUNDING

Estelle Doheny Eye Foundation	NESBURN, A B Herpes Simplex of the Eye: Pathogenesis and Treatment Intramural Project	1231	90,527
Eye Bank for Sight Restoration	DEUTSCH, F H Study on Herpes Simplex Virus Intramural Project	1232	10,000
	TURTZ, A L Specular Microscope Intramural Project	1232a	10,000
Fight for Sight, Inc.	BERGER, S B Studies of Light Scattering in the Cornea Harvard University Cambridge, Massachusetts	1233	6,500
	BERK, R S Antineoplastic Drug-Induced Infections Wayne State University Detroit, Michigan	1233a	3,500

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Fight for Sight, Inc. (Cont'd)	ELLISON, A Therapeutic Effects of 5 Flucytosine on Mycotic Endophthalmitis University of Texas San Antonio, Texas	1234	6,000
	FISCHBARG, J Ionic Gradients and Water Flow within the Corneal Endothelial Preparation Columbia University New York, New York	1235	4,000
	KAPLAN, H J Regulation of the Immune Response to Alloantigens Placed within the Eye University of Iowa Iowa City, Iowa	1236	2,500
	Koss, M C Analysis of Clonidine-Induced Mydriasis University of Oklahoma Oklahoma City, Oklahoma	1237	3,500
	LEVITAN, D B Isolation of the Herpes Simplex Virus Fusion Factors University of Pennsylvania Philadelphia, Pennsylvania	1238	1,050
	MASTERSON, E The Role of the Thyroid in the Dehydration and Development of Transparency in the Embryonic Chick Cornea Medical College of Wisconsin Milwaukee, Wisconsin	1239	900
	MATHENY, J L Adrenoceptor Sensitivity Alterations of Iris Muscle in Thyroid Dysfunction Medical College of Georgia Augusta, Georgia	1240	2,200
	SUGAR, J Effects of Inhibitors of Inflammatory Mediators on Recurrent Herpetic Keratitis University of Illinois School of Medicine Chicago, Illinois	1241	6,000
	WYRICK, P B Toxicity of Chlamydiae University of North Carolina Chapel Hill, North Carolina	1242	5,000
	YAMAGUCHI, K O Sjogrens Syndrome University of California, San Francisco San Francisco, California	1243	5,000
John A. Hartford Foundation, Inc.	GASSET, A R Thermokeratoplasty University of Florida Gainesville, Florida	1245	18,388
National Society for the Prevention of Blindness, Inc.	BOURNE, W M Donor Endothelial Cell Survival Following Fresh and Cryopreserved Penetrating Keratoplasty in Primates University of Iowa Iowa City, Iowa	1246	1,717
	GIPSON, I K Role of Epithelial Cell Microfilaments in Corneal Wound Healing University of Oregon Medical School Portland, Oregon	1247	4,850
	KAPLAN, H J Regulation of the Immune Response to Alloantigens Placed within the Eye University of Iowa Iowa City, Iowa	1248	2,500

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Society for the Prevention of Blindness, Inc. (Cont'd)	RITCH, R Localization of Na <sup>+</sup> - K <sup>+</sup> - Activated ATPase in the Anterior Segment of the Eye Mount Sinai School of Medicine New York, New York	1249	2,000
Research to Prevent Blindness, Inc.	PAVAN-LANGSTON, D For Research in Ara-AMP Antiviral Agent for Use in Treatment of Herpes Disease Harvard University Cambridge, Massachusetts	1250	25,000
	PRENDERGAST, R A Immunologic Factors in Corneal Transplantation Johns Hopkins University Baltimore, Maryland	1251	15,000
Sloan Kettering Cancer Center	BOONE, W B Immunology of Sympathetic Ophthalmitis Sloan Kettering Cancer Center New York, New York	1252	50,000
Total Projects for Program: 23		Total Known Funding:	276,132

### III. Cataract





### III. Cataract

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) EXTRAMURAL RESEARCH FUNDING			
National Heart, Lung, and Blood Institute	CHIPAULT, JR Lipids of Lens of Triparanol Treated Rats University of Minnesota Austin, Minnesota	1253	34,000
National Institute of Child Health and Human Development	SHAPIRO, A Optic Lens Development Yeshiva University Bronx, New York	1254	15,000
Total Projects for Program: 2		Total Known Funding:	49,000

#### NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) INTRAMURAL RESEARCH PROJECTS

National Institute of Child Health and Human Development	PIATIGORSKY, J Chick Lens Cell Differentiation—Molecular Aspects	1256	222,600
Total Projects for Program: 1		Total Known Funding:	222,600

#### DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE (EXCLUSIVE OF NIH) RESEARCH FUNDING

National Institute of Occupational Safety and Health	WOLBARSH, M L Safe Ocular Levels for Near Infrared Occupational Exposures Duke University Durham, North Carolina	1257	32,549
Total Projects for Program: 1		Total Known Funding:	32,549

#### OTHER FEDERAL RESEARCH FUNDING

Department of Agriculture	AZARI, P Dietary Factors in White Fish Meal Responsible for Cataract Formation in Trout Colorado State University Fort Collins, Colorado	1258	10,933
Department of Defense			
Air Force	BONNEY, C H High-Z Particle Research U.S. Air Force School of Aerospace Medicine Brooks Air Force Base San Antonio, Texas	1259	186,000
	MIKESELL, G W, JR Corneal and Lenticular Safety Criteria for Air Force Developmental and Operational Lasers U.S. Air Force School of Aerospace Medicine Brooks Air Force Base San Antonio, Texas	1260	23,500
	WOLBARSH, M L The Origin of Cataracts in the Lens from Infrared Laser Radiation Duke University Medical Center Durham, North Carolina	1261	28,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Department of Defense (Cont'd)			
Navy	BLAIS, B M Prospective Epidemiological Ophthalmologic Examination of Naval Personnel Exposed to Non-Ionizing Radiation Naval Regional Medical Center Philadelphia, Pennsylvania	1262	25,000
	CARPENTER, R L Effects of Microwave Radiation on the Crystalline Lens of the Eye Northeast Radiation Laboratory Winchester, Massachusetts	1263	70,730
	KRAMAR, P O Quantitation of Microwave Radiation Effects on the Head and Eyes of Rabbits, Primates and Man University of Washington Seattle, Washington	1264	23,000
	SIMON, D R Ultrastructural Studies of Microwave Cataractogenesis Naval Medical Research Institute Bethesda, Maryland	1265	55,000
Energy Research and Development Administration	KINSEY, V E Biochemical Studies on the Ocular Lens in Relation to Cataractogenesis Oakland University Rochester, Michigan	1266	21,181
Veterans Administration	CINEFRO, R Study of Corneal Changes Following Cataract Surgery Veterans Administration Hospital Hines, Illinois	1267	11,200
	COULTER, J B Effect of Copper (II) on Lens Transparency and Glucose Metabolism Veterans Administration Center Temple, Texas	1268	11,200
	KAUFMAN, H E Randomized Double Blind Study of the Effect of Indocin Ophthalmic Suspension in Minimizing Inflam- mation after Cataract Surgery Veterans Administration Hospital Gainesville, Florida	1269	11,200
	KELERTAS, A Soft Contact Lens Wear Following Intracapsular Cataract Extraction Veterans Administration Hospital Hines, Illinois	1270	11,200
	McAFEE, R D Biological Effects of Microwave Radiation Veterans Administration Hospital New Orleans, Louisiana	1271	11,200
	SCHAUMANN, B Marinesco-Sjogren Syndrome Veterans Administration Hospital Minneapolis, Minnesota	1272	11,200
Total Projects for Program: 15		Total Known Funding:	510,544

## NATIONAL PHILANTHROPIC AND VOLUNTARY AGENCY RESEARCH FUNDING

Eye Bank for Sight Restoration	BHUYAN, K C Mechanisms of Cataractogenesis Caused by Amino-triazole Intramural Project	1273	45,000
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Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Fight for Sight, Inc.	STERN, M Investigation of Chemical Changes in Alpha Crystallin in Human Senile Cataract Columbia University New York, New York	1274	750
National Society for the Prevention of Blindness, Inc.	CHATTERJEE, A Cataract Etiology Study Ludhiana Christian Medical College Lahore, India	1276	5,000
Total Projects for Program: 3		Total Known Funding:	50,750



#### IV. Glaucoma





## IV. Glaucoma

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) EXTRAMURAL RESEARCH FUNDING			
National Institute of Arthritis, Metabolism, and Digestive Diseases	PALMBERG, P F Glucocorticoid Sensitivity in Primary Open Angle Glaucoma and Diabetes Washington University St. Louis, Missouri	1277	24,000
National Institute of General Medical Sciences	ZIMMERMAN, T J Aqueous Humor Dynamics and Treatment of Glaucoma University of Florida Gainesville, Florida	1278	19,092
Division of Research Resources	GREENFIELD, R H Activities with the Glaucoma Center Washington University St. Louis, Missouri	1279	18,020
	HENKIND, P Physiology of Glaucoma Montefiore Hospital and Medical Center New York, New York	1280	45,806
	KULIKOWSKI, C Medical Modeling and Decision Making in Glaucoma Rutgers, the State University of New Jersey New Brunswick, New Jersey	1281	46,000
	MANDELL, A I Subconjunctival Injections of 6-hydroxydopamine in Glaucoma University of Tennessee Memphis, Tennessee	1282	10,872
	SCHWARTZ, B Endocrine Aspects of Glaucoma New England Medical Center Hospital Boston, Massachusetts	1283	33,004
Total Projects for Program: 7		Total Known Funding:	196,794

### DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE (EXCLUSIVE OF NIH) RESEARCH FUNDING

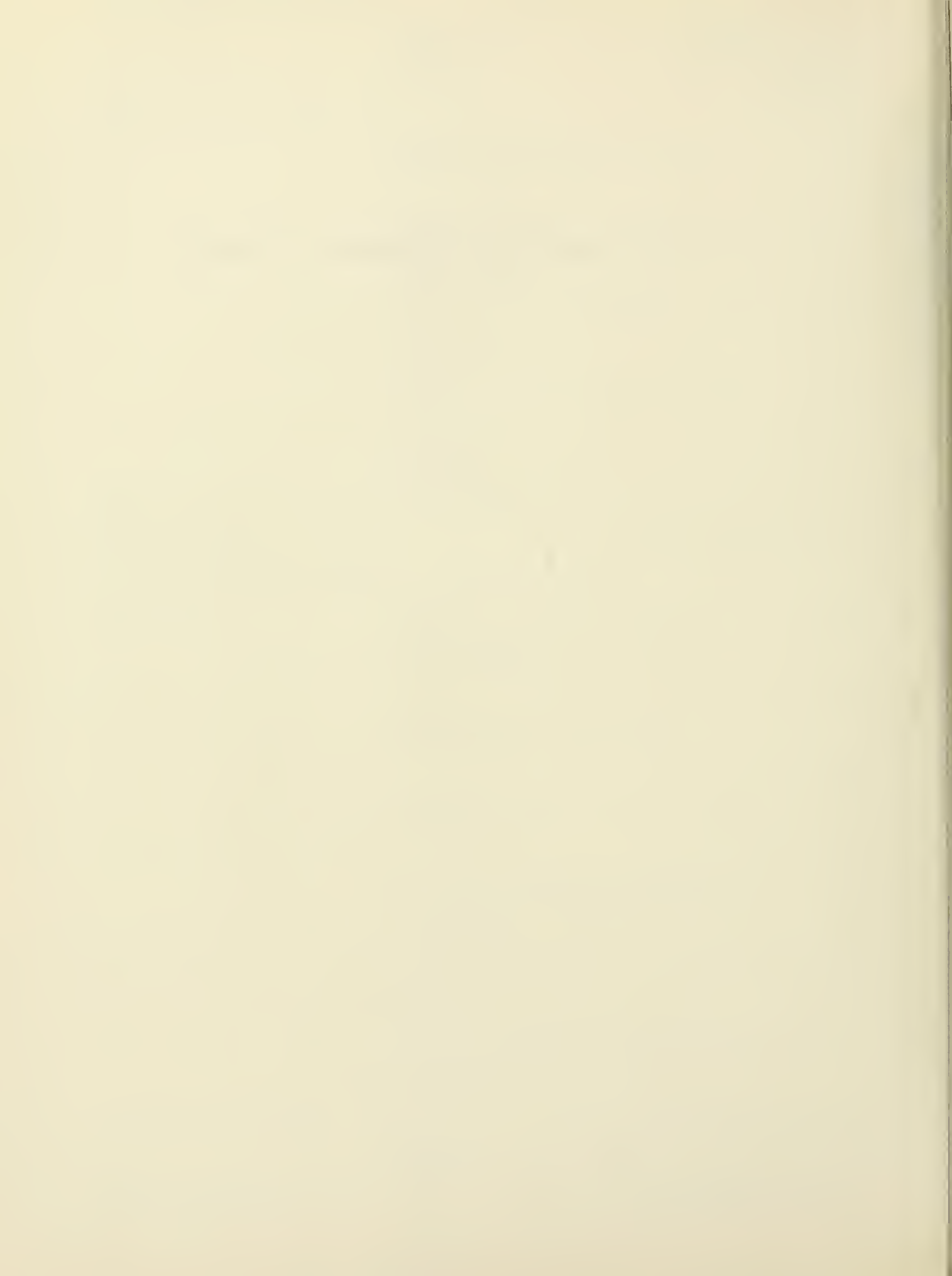
Food and Drug Administration	FRAUNFELDER, F T National Registry of Drug Induced Ocular Side Effects University of Arkansas Little Rock, Arkansas	1284	38,655
National Institute on Drug Abuse	GREEN, K Ocular Response to Marijuana and its Derivatives Medical College of Georgia Augusta, Georgia	1285	34,053
Total Projects for Program: 2		Total Known Funding:	72,708

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
<b>OTHER FEDERAL RESEARCH FUNDING</b>			
Veterans Administration	FRAUNFELDER, F T Intraocular Pressure Measurement During Enucleation Veterans Administration Hospital Little Rock, Arkansas	1286	11,200
	FRAUNFELDER, F T Evaluation of Diurnal Ocular Pressures Using Ocusert Veterans Administration Hospital Little Rock, Arkansas	1287	11,200
	LEE, P F A New Microsurgical Treatment for Glaucoma Veterans Administration Hospital Albany, New York	1288	11,200
	LEVY, N S Glaucoma and Axoplasmic Flow in the Primate Optic Nerve Veterans Administration Hospital Gainesville, Florida	1289	11,200
	WORTHEN, D M Glaucoma Studies Veterans Administration Hospital San Diego, California	1290	11,200
Total Projects for Program: 5		Total Known Funding:	56,000

**NATIONAL PHILANTHROPIC AND VOLUNTARY AGENCY RESEARCH FUNDING**

Fight for Sight, Inc.	DAVID, R Mode of Action of Osmotic Agents in Lowering the Intraocular Pressure Washington University St. Louis, Missouri	1291	6,000
	KRUPIN, T Hyperthermia and Aqueous Humor Dynamics Washington University St. Louis, Missouri	1292	4,568
	RAVIOLA, G Effects of Hyperosmotic Agents on the Anterior Segment of the Eye Boston University Boston, Massachusetts	1293	3,000
	SHIN, D H Pharmacological Study of Dipivalyl Epinephrine Bitartrate— Investigation of Potential Blockage of Corticosteroid Washington University St. Louis, Missouri	1294	7,500
	SMITH, J A Clinical Glaucoma Research University of Miami Miami, Florida	1295	3,725
	WAITZMAN, M B Adenylate Cyclase and Prostaglandin Synthetase Activity in Ciliary Process Tissue Emory University Atlanta, Georgia	1296	2,800
E. Matilda Ziegler Foundation for the Blind, Inc.	SEARS, M Research Program in Cause and Prevention of Blindness Foresight, Inc. New Haven, Connecticut	1297	10,000
Total Projects for Program: 7		Total Known Funding:	37,593

## V. Sensory and Motor Disorders of Vision



## V. Sensory and Motor Disorders of Vision

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) EXTRAMURAL RESEARCH FUNDING			
National Cancer Institute	KROHN, D L Ocular Cancer Detection by Hematoporphyrin Fluorescence New York University New York, New York	1298	131,145
National Heart, Lung, and Blood Institute	ANDERSON, B Hyperbaric Oxygen and Visual Function in Selected Aged Humans Duke University Durham, North Carolina	1299	69,185
	NICHOLS, C J Effects of High Oxygen Pressures on Visual Function University of Pennsylvania Philadelphia, Pennsylvania	1300	8,761
	NICHOLS, C W Inert Gas Influences Upon Visual Function in Man University of Pennsylvania Philadelphia, Pennsylvania	1301	8,761
	NICHOLS, C W Changes in Human Vision During Known Tolerable Exposures University of Pennsylvania Philadelphia, Pennsylvania	1302	8,761
	WOLBARSH, M L Effects of Reduced Pressure and Oxygen Concentration on Visual Function in Man Duke University Durham, North Carolina	1303	69,185
National Institute of Arthritis, Metabolism, and Digestive Diseases	KRISS, J P Studies on Long-Acting Thyroid Stimulator Stanford University Stanford, California	1304	72,280
	SISSON, J C Mucopolysaccharide Metabolism in Exophthalmos University of Michigan Ann Arbor, Michigan	1305	76,448
National Institute of Neurological and Communicative Disorders and Stroke	ALLMAN, J M Functional Organization of Primate Visual Cortex California Institute of Technology Pasadena, California	1306	39,580
	AMES, A, III Chemistry and Function in Central Nervous System Massachusetts General Hospital Boston, Massachusetts	1307	69,000
	ARNETT, D W Prototype Model of the Lateral Geniculate Pennsylvania State University University Park, Pennsylvania	1308	21,328

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Neurological and Communicative Disorders and Stroke (Cont'd)	BARLOW, J S Computer Studies of Brain Potentials in Man McLean Hospital, Division of Massachusetts General Hospital Boston, Massachusetts	1309	113,058
	BIZZI, E Eye-Head Coordination Massachusetts Institute of Technology Cambridge, Massachusetts	1310	76,425
	BODIS-WOLLNER, I Role of Dopaminergic Transmission in Human Visual System City University of New York New York, New York	1311	21,758
	BONDY, S C The Biochemical Effects of Sensory Deprivation University of Colorado Denver, Colorado	1312	62,359
	CHAN-PALAY, V Organization of the Striate Cortex Harvard Medical School Boston, Massachusetts	1313	59,927
	CHOW, K L Epilepsy and Developmental Neurophysiology in Visual System Stanford University Stanford, California	1314	40,362
	COHEN, B The Oculomotor System and Body Postural Mechanisms Mount Sinai School of Medicine New York, New York	1315	93,564
	COHEN, B Oculomotor Deficits in Diseases of Basal Ganglia Mount Sinai School of Medicine New York, New York	1316	21,758
	CORNWELL, P R Neonatal Brain Damage and Vision Pennsylvania State University University Park, Pennsylvania	1317	64,235
	DILLER, L Diagnosis and Remediation of Deficits in Visual Information Processing New York University New York, New York	1318	69,000
	DOTY, R W Learning, Perception and Neural Integration University of Rochester Rochester, New York	1319	118,669
	FENDER, D H Human Vision California Institute of Technology Pasadena, California	1320	54,710
	GUILLERY, R W Architectonic and Synaptic Organization in the Brain University of Wisconsin Madison, Wisconsin	1321	95,835



Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Neurological and Communicative Disorders and Stroke (Cont'd)	HEIN, A Development of Perceptual Capacities Massachusetts Institute of Technology Cambridge, Massachusetts	1322	37,621
	HERNOON, R M Localization of Basic Protein in Optic Nerve Johns Hopkins University Baltimore, Maryland	1323	17,164
	HUGHES, C P Function of Subcortical Visual Systems Washington University St. Louis, Missouri	1324	70,069
	INGLE, D J Motor Functions of Optic Tectum and Thalamus Brandeis University Waltham, Massachusetts	1325	50,093
	KAAS, J H Visual Association Cortex Vanderbilt University Nashville, Tennessee	1326	44,268
	KRIPKE, B R Neurophysiology in Striate Cortex University of Utah Salt Lake City, Utah	1327	62,023
	LAVAIL, J H Retrograde Axonal Transport in the Visual System University of California, San Francisco San Francisco, California	1328	55,710
	LEHMAN, R A Lateralization of Handedness, Attention and Learning University of Colorado Denver, Colorado	1329	28,305
	LEVINE, D N Disturbances of Visual Perception in Cerebral Disease Massachusetts General Hospital Boston, Massachusetts	1330	46,608
	MARKHAM, C H Central Vestibular Mechanisms University of California, Los Angeles Los Angeles, California	1331	82,217
	MATHERS, L H Development and Plasticity in a Visual System Stanford University Stanford, California	1332	49,689
	McLWAIN, J T Cortical Control of Superior Colliculus Brown University Providence, Rhode Island	1333	21,929
	McKEEVER, W F Lateral Dominance and Lateral Word Recognition Bowling Green University Bowling Green, Ohio	1334	24,248
	McKHANN, G M Myelination in Rat Optic Nerve Johns Hopkins University Baltimore, Maryland	1335	17,164

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Neurological and Communicative Disorders and Stroke (Cont'd)	McKHANN, G M Neuroglia in the Developing Optic Nerve Johns Hopkins University Baltimore, Maryland	1336	17,164
	MOORE, R Y Central Mechanism in Diurnal Rhythm Regulation University of California, San Diego La Jolla, California	1337	83,536
	MURPHY, E H Visual Discrimination Medical College of Pennsylvania Philadelphia, Pennsylvania	1338	20,315
	MURRAY, M Generation and Degeneration of Axons Medical College of Pennsylvania Philadelphia, Pennsylvania	1339	42,551
	NAKA, K-I Vertebrate Visual System California Institute of Technology Pasadena, California	1340	54,710
	NAUNTON, R F Clinical Vestibular and Eye Movement Studies University of Chicago Chicago, Illinois	1341	69,000
	OSMAN, E Detection and Recognition in Audition and Vision Brooklyn College, City University of New York New York, New York	1342	20,630
	PINTO-HAMUY, T Comparative Studies on Mammalian Nervous System University of Chile Santiago, Chile	1343	21,500
	POGGIO, G F Evaluation of the Clinical Eye Movement Detector Johns Hopkins University Baltimore, Maryland	1344	69,000
	POGGIO, G F Visual System Johns Hopkins University Baltimore, Maryland	1345	99,328
	PROCTOR, L R Testing the Vestibular and Oculomotor System University of Chicago Chicago, Illinois	1346	46,000
	RAE, J Neuro-Ophthalmological Analysis of Brain Injury Sites University of Texas Galveston, Texas	1347	46,000
	ROWELL, C H Mechanisms of Modulation of Visually Induced Behavior University of California, Berkeley Berkeley, California	1348	59,899
	SCHLAG, J D Conditioning of Pyramidal Activity by Sensory Inflow University of California, Los Angeles Los Angeles, California	1349	41,548

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Neurological and Communicative Disorders and Stroke (Cont'd)	SHAY, J CNS Oxygen/Glucose Lack in Vitro Massachusetts General Hospital Boston, Massachusetts	1350	52,291
	SIMPSON, J I Cerebellar Vestibular System—Visual Eye Movement Control New York University New York, New York	1351	35,226
	SIMPSON, J I Visual Climbing and Mossy Fiber Projections to the Cerebellum New York University New York, New York	1352	35,226
	TARLOV, S R Neurochemical and Functional Correlation in Vestibulo- Oculomotor System Children's Hospital Medical Center Boston, Massachusetts	1353	31,745
	TEUBER, H-L Feature Detectors Massachusetts Institute of Technology Cambridge, Massachusetts	1354	79,162
	TEUBER, H-L Plasticity in Sensory Motor Coordination Massachusetts Institute of Technology Cambridge, Massachusetts	1355	79,162
	TORRES, F Visual Evoked Responses University of Minnesota Hospital Minneapolis, Minnesota	1356	31,858
	WARD, P H Experimental Studies on Vestibular Mechanisms University of California, Los Angeles Los Angeles, California	1357	52,475
	WARD, P H Vestibulo-Ocular Physiology University of California, Los Angeles Los Angeles, California	1358	72,869
	WILKENS, L A Synaptic Integration in a Biomodal Sensory Interneuron University of Missouri St. Louis, Missouri	1359	12,331
National Institute of Child Health and Human Development	WONG-RILEY, M T Organization and Connections of Visual Cortex University of California, San Francisco San Francisco, California	1360	57,957
	WRAY, S H Demyelination and the Optic Nerve Massachusetts General Hospital Boston, Massachusetts	1361	43,844
	BARNHARD, K E Effect of Stimulation on Premature Infants University of Washington Seattle, Washington	1362	6,539

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Child Health and Human Development (Cont'd)	BRAINE, L G Processing of Orientation Information by Children City University of New York New York, New York	1363	29,616
	BURCHFIELD, J Visual Suppression Time-Locked to Voluntary Eye Movement Children's Hospital Medical Center Boston, Massachusetts	1364	3,699
	CAREY, S E Development of Visual Form Recognition in Children Massachusetts Institute of Technology Cambridge, Massachusetts	1365	46,528
	CONNELLY, T G Iris-Lens Metaplasia In Vitro: Role of the Pituitary University of Michigan Ann Arbor, Michigan	1366	23,813
	DONNIE, L H Visual Perceptual Development in Infancy Brooklyn College New York, New York	1367	35,877
	DUFFY, F H Visual Evoked Potentials in Amblyopia ex Anopsia Children's Hospital Medical Center Boston, Massachusetts	1368	3,699
	DUFFY, F H Neurophysiology of Induced Amblyopia ex Anopsia in Kittens Children's Hospital Medical Center Boston, Massachusetts	1369	3,699
	GUENTER, R Development of Visually Evoked Responses and Associated Behavior University of California	1371	82,047
	HAITH, M M Developmental Studies of Short-Term Memory University of Denver Denver, Colorado	1372	61,719
	HENDRICKSON, A The Primate Visual System University of Washington Seattle, Washington	1373	6,539
	KALINA, R E Normal and Altered Visual Development in Premature Infants University of Washington Seattle, Washington	1374	6,539
	KEESEY, U T Visual Pathways in Human Albinos University of Wisconsin Madison, Wisconsin	1375	11,959
	KURTZBERG, D Visuomotor Processes and the Development of Vision Albert Einstein College of Medicine New York, New York	1376	34,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Child Health and Human Development (Cont'd)	LUND, J Neuronal Development of the Visual Cortex University of Washington Seattle, Washington	1377	6,539
	MAHUT, H S Hippocampus—A Neuropsychological Development Study Northeastern University Boston, Massachusetts	1378	41,416
	MEYER, D Development of the Eye University of California, Davis Davis, California	1379	34,000
	PIDDINGTON, R L Role of Glutamine Synthetase in Neurogenesis University of Pennsylvania Philadelphia, Pennsylvania	1380	12,640
	RIESEN, A H Vision in Special Environments—Developmental Effects University of California, Riverside Riverside, California	1381	23,631
	SACKETT, G P Color Vision in Neonate Pigtail Monkeys University of Washington Seattle, Washington	1382	34,000
	SALAPATEK, P H Infant Visual System University of Minnesota Minneapolis, Minnesota	1383	16,077
	SALAPATEK, P H Pattern Processing During Human Infancy University of Minnesota Minneapolis, Minnesota	1384	67,677
	SCHALLER, M J Chromatic Vision in Infancy: Operant Conditioning University of Wisconsin Madison, Wisconsin	1385	20,813
	SHINKMAN, P G Plasticity in the Development of the Visual System University of North Carolina Chapel Hill, North Carolina	1386	8,954
	WHITESIDE, J A Peripheral Vision in Children and Adults Clark University Worcester, Massachusetts	1387	6,981
	WOOLSEY, C N Cortical Visual Areas University of Wisconsin Madison, Wisconsin	1388	11,959
National Institute of General Medical Sciences	YONAS, A Development of Space Perception University of Minnesota Minneapolis, Minnesota	1389	16,077
	MEINDL, J D Ophthalmological Imaging Systems Stanford University Stanford, California	1390	139,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of General Medical Sciences (Cont'd)	SAFIR, A Racial Distribution and Genetics of Refractive Errors Mount Sinai School of Medicine New York, New York	1391	47,000
National Institute on Aging	WALSH, D A Age Differences in Visual Information Processing University of Southern California Los Angeles, California	1392	25,452
Division of Research Resources	FANTZ, R L Scalp Potentials and Other Potentials Evoked by Different Visual Patterns in Neonatal and Older Infants Case Western Reserve University Cleveland, Ohio	1393	46,000
	HELD, R M Visual-Motor Coordination in Primates Harvard Medical School Boston, Massachusetts	1394	25,498
	VON NOORDEN, G K Genetic Studies of Inherited Eye Diseases Baylor College of Medicine Houston, Texas	1395	15,554
	WIESEL, T N Sensory Deprivation in Primates Harvard Medical School Boston, Massachusetts	1396	25,498
Total Projects for Program: 98		Total Known Funding:	4,329,568

## NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) RESEARCH CONTRACT FUNDING

National Institute of Neurological and Communicative Disorders, and Stroke	DOTY, R W Development of a Sensory Prosthesis University of Rochester Rochester, New York	1397	81,587
	POLLEN, D A Studies to Determine Feasibility of a Sensory Prosthesis Massachusetts General Hospital Boston, Massachusetts	1398	48,938
Total Projects for Program: 2		Total Known Funding:	130,525

## NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) INTRAMURAL RESEARCH PROJECTS

National Heart, Lung, and Blood Institute	NOBLE, F Eye Motion Measurement by Ultrasound	1399	37,000
National Institute of Neurological and Communicative Disorders and Stroke	FEINBERG, R Study of Visual Abnormalities in the Collaborative Perinatal Project	1400	61,200
	HAMBRECHT, F T Neural Prosthesis Program	1401	0
	LASANSKY, A Synaptic Contacts of Visual Cells	1402	65,000
Total Projects for Program: 4		Total Known Funding:	163,200



Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
<b>DEPARTMENT OF HEALTH, EDUCATION AND WELFARE (EXCLUSIVE OF NIH) RESEARCH FUNDING</b>			
Health Resources Administration	INDERFURTH, G Development and Methodology of a Near and Far Vision Scale Using an Interview Method	1403	50,000
National Institute on Alcohol Abuse and Alcoholism	BROWN, B Drugs and Uncertainty: Effects on Dynamic Visual Acuity Institutes of Medical Sciences Smith-Kettlewell Institute of Visual Science San Francisco, California	1404	88,345
	MOSKOWITZ, H A Alcohol Effects on Driving, Perception and Attention University of California, Davis Davis, California	1405	132,533
	STERN, J A Alcohol Intake, Search Activity and Driver Performance Washington University St. Louis, Missouri	1406	96,983
National Institute on Drug Abuse	SOMJEN, G G Hallucinogenic Drug Effects on Visual Neurons Duke University Durham, North Carolina	1407	44,807
National Institute of Education	COOPER, R M The Control of Eye Fixation by the Meaning of Spoken Language and Its Application to Perceptual and Cognitive Processes Stanford Research Institute Menlo Park, California	1408	67,000
	JUDD, D E Visual Information Processing and Eye Movement Research Nero and Associates Inc. Portland, Oregon	1409	93,000
National Institute of Mental Health	APPELBAUM, M I Spatial Visualization and Imagery University of North Carolina Chapel Hill, North Carolina	1410	4,838
	ATTNEAVE, F Studies on Spatial Representation Oregon State University Eugene, Oregon	1411	27,429
	AVANT, L L Timing and Processing of Stimulus Events Iowa State University Ames, Iowa	1412	27,342
	BARBER, T X Personality, Suggestion and Hypnotic Phenomena Medfield Foundation Medfield, Massachusetts	1413	35,377
	BIEDERMAN, I Veridical Scenes State University of New York at Buffalo Buffalo, New York	1414	27,405
	BORNSTEIN, M H Infants' Visual Processing of Chromatic Information Princeton University Princeton, New Jersey	1415	7,600
	BUTTER, C M Neurobehavioral Analysis of the Primate Visual System University of Michigan Ann Arbor, Michigan	1416	23,678

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Mental Health (Cont'd)	CARL, J R Functional Plasticity in Split Brain Cats California Institute of Technology Pasadena, California	1417	8,135
	CARON, R F Effects of Early Training on Infant Discrimination George Washington University Infant Laboratory Silver Spring, Maryland	1418	72,750
	CARTERETTE, E C A Quantitative Analysis of Judgment University of California, Los Angeles Los Angeles, California	1419	59,682
	EHRLICHMAN, H Studies in "Non-Visual" Ocular Behavior City University of New York New York, New York	1420	35,590
	EPSTEIN, W The Constancy of Perceived Velocity University of Wisconsin Madison, Wisconsin	1421	22,975
	ESTES, W K Visual Information Processing Rockefeller University New York, New York	1422	54,000
	EYMAN, R K Mental Retardates—Phi Measurements through Optokinetic Nystagmus Pacific State Hospital Pomona, California	1423	4,790
	FESTINGER, L Determinants of Visual Perception New School for Social Reseach New York, New York	1424	47,980
	FRIEDMAN, S L EEG Visual Evoked Potentials (VEP) Components Within and Across Subjects	1425	14,000
	GLICKSTEIN, M Brain Mechanisms in Visual and Motor Functions Brown University Providence, Rhode Island	1426	84,459
	GOFF, W R Psychophysiology of Perception Veterans Administration Hospital West Haven, Connecticut	1427	71,564
	GOGEL, W C Applications of the Adjacency Principle University of California, Santa Barbara Santa Barbara, California	1428	69,541
	HAGEN, M A Modification of Pictorial Surface and Perspective Boston University Boston, Massachusetts	1429	23,132
	HAITH, M M Perceptual and Cognitive Development in Human Infants University of Denver Denver, Colorado	1430	61,719

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Mental Health (Cont'd)	HAMILTON, C R Callosal Connections Between Peripheral Regions of the Visual Field California Institute of Technology Pasadena, California	1431	7,397
	HOLZMAN, P S Psychomotility and Cognitive Style in the Schizophrenias University of Chicago Chicago, Illinois	1432	51,932
	INGLE, D J Behavioral Effects of Retinotectal Compression McLean Hospital Belmont, Massachusetts	1433	6,311
	JACOBS, B L Role of the Amygdala in Behavior — Unit Studies Princeton University Princeton, New Jersey	1434	51,862
	KLATZKY, R L Visual and Verbal Coding of Information University of California, Santa Barbara Santa Barbara, California	1435	24,357
	LACKNER, J R Sensory Factors in Adaptation to Visual Rearrangement Brandeis University Waltham, Massachusetts	1436	5,918
	LEIBOWITZ, H W Analytic Studies of Visual Perception Pennsylvania State University University Park, Pennsylvania	1437	39,495
	LINDSLEY, D B Visual Mechanisms of Attention and Perception University of California, Los Angeles Los Angeles, California	1438	30,195
	LOFTUS, E F Reconstructive Memory Processes in Eyewitness Testimony University of Washington Seattle, Washington	1439	28,661
	LOOP, M S Psychophysical Effects of Visual Deprivation University of Illinois, Urbana Urbana, Illinois	1440	41,610
	MANDLER, J M Development of Semantic and Visual Organization University of California, San Diego La Jolla, California	1441	33,160
	MANELIS, L M Visual and Lexical Factors in Word Perception Illinois State University Normal, Illinois	1442	6,558
	McCONKIE, G W A Computer-Based Exploration of Skilled Reading Cornell University Ithaca, New York	1443	41,210
	MEYER, R L Growth of Half Eyes onto the Optic Tectum of Goldfish California Institute of Technology Pasadena, California	1444	8,135

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Mental Health (Cont'd)	MEYER, R L Underwater Mapping of the Visual Field of Fish California Institute of Technology Pasadena, California	1445	8,135
	MEYER, R L Regrowth of Optic Fibers Past Surgically-Disrupted Tectal Regions California Institute of Technology Pasadena, California	1446	54,000
	MILES, F A Eye-Head Coordination in the Primate: Neural Substrate and Plasticity Intramural Project	1447	158,000
	MILEWSKI, A E Infant Perception of Visual Pattern Structure Depaul University Chicago, Illinois	1448	6,850
	MISHKIN, M Neural Mechanisms in Vision Intramural Project	1449	77,000
	PASIK, P Neurophysiologic Aspects of Visual Discrimination Mount Sinai School of Medicine New York, New York	1450	119,198
	PETTIGREW, J D Physiology-Behavior Correlation After Environmental Modification California Institute of Technology Pasadena, California	1451	3,938
	PETTIGREW, J D Environmental Modification in Kitten Visual Cortex California Institute of Technology Pasadena, California	1452	3,938
	PETTIGREW, J D Inhibitory Antagonism in the Primary Visual Cortex California Institute of Technology Pasadena, California	1453	3,938
	PETTIGREW, J D Visual Experience on Developing Cortical Neurons California Institute of Technology Pasadena, California	1454	3,938
	PETTIGREW, J D Structure-Function Relations in Visual Cortex California Institute of Technology Pasadena, California	1455	3,938
	PETTIGREW, J D Role of Corticofugal Fibers to the Lateral Geniculate Nucleus California Institute of Technology Pasadena, California	1456	3,938
	PETTIGREW, J D Somatosensory Pattern Recognition and Receptive Field Modification California Institute of Technology Pasadena, California	1457	3,938
	PETTIGREW, J D Organization of the Primary Visual Cortex California Institute of Technology Pasadena, California	1458	3,938

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Mental Health (Cont'd)	PRIBRAM, K H Character of Visual Receptive Fields Stanford University Stanford, California	1459	7,397
	PRIBRAM, K H Lesions of Inferotemporal Cortex, Foveal Prestriate Cortex and Pulvinar Stanford University Stanford, California	1460	7,397
	PRIBRAM, K H Internal-vs-External Processing or Sequential-vs- Spatial Processing Stanford University Stanford, California	1461	7,397
	PRIBRAM, K H Radioactive Tracing in Visual System Stanford University Stanford, California	1462	7,397
	PRIBRAM, K H Performing Delayed Alternation Stanford University Stanford, California	1463	7,397
	ROTHBLAT, L A Early Visual Exposure: Brain Morphology and Behavior George Washington University Washington, District of Columbia	1464	30,329
	SHINKMAN, P G Behavioral and Physiological Plasticity in Visual Development University of North Carolina Chapel Hill, North Carolina	1465	22,231
	SNODGRASS, J G Perceptual Processing in Memory New York University New York, New York	1466	29,665
	SOKOLOFF, L Studies on Regional Cerebral Circulation and Metabolism New York University New York, New York	1467	275,000
	SPINELLI, D N Neuropsychology of Visual Recognition and Perception University of Massachusetts Amherst, Massachusetts	1468	75,066
	STEIN, B E Superior Colliculus and Corticotectal Maturation Medical College of Virginia Richmond, Virginia	1469	5,943
	TERMAN, M Behavioral Analysis of Circadian Sensory Oscillations Northeastern University Boston, Massachusetts	1470	37,698
	TIEMAN, S B Interhemispheric Communication Between Non- Topographical Visual Areas California Institute of Technology Pasadena, California	1471	7,397
	TIEMAN, S B Interocular Transfer of Pattern Discrimination Following Hemispherectomy California Institute of Technology Pasadena, California	1472	7,397

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Mental Health (Cont'd)	TOWNSEND, J T Testing Feature Models of Letter Recognition Purdue University West Lafayette, Indiana	1473	8,180
	TURNER, B H Anatomy of Visuo- and Somatomotor Behaviors Howard University Washington, District of Columbia	1474	29,109
	UTTAL, W R An Experimental Approach to a Form Perception Theory University of Michigan Ann Arbor, Michigan	1475	32,300
	VAUGHAN, J Visual Fixations and Visual Information Processing Hamilton College Clinton, New York	1476	12,862
	VONEIDA, T J Anatomic and Behavioral Studies of Brain Mechanisms Case Western Reserve University Cleveland, Ohio	1477	37,592
	WALK, R D Development of Space Perception George Washington University Washington, District of Columbia	1478	21,768
	WEINTRAUB, D J Contour and Context in Visual Pattern Perception University of Michigan Ann Arbor, Michigan	1479	17,007
	WESTENDORF, D H Binocular Detection by Stereo-Defective Observers University of Arkansas Fayetteville, Arkansas	1480	5,462
	WRIGHT, A A Color Naming: a Model System of Coding University of Texas Houston, Texas	1481	20,095
	WURTZ, R H Sensory-Motor Integration in the Primate Visual System Intramural Project	1482	149,000
	WURTZ, R H Vision During Eye Movements Intramural Project	1483	57,800
	ZAIDEL, E Laterality Effects on an Embedded Figures Task California Institute of Technology Pasadena, California	1484	8,135
	ZELLER, E A Investigation of Retinal Functions in Schizophrenia and Parkinson's Disease Northwestern University School of Medicine Chicago, Illinois	1485	54,000
National Institute of Occupational Safety and Health	MURRAY, W Investigation of Optical Radiation Hazards	1486	27,000



Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Social and Rehabilitation Service	ANDERSON, M E Head and Eye Position Training with a Visually Monitored Task University of Washington Seattle, Washington	1487	2,750
	DILLER, L Functional Skills Remediation in Hemiplegia-Assessment Model for Eye-Hand Skills New York University New York, New York	1488	56,795
	KWATNY, E Response Oriented Sensory Aid System for Assessment and Treatment of Oculomotor Dysfunction Temple University Philadelphia, Pennsylvania	1490	47,730
	LAWRENCE, W H The Relationship of Abnormal Eye Movements to Rehabilitation Potential George Washington University Washington, District of Columbia	1491	9,624
	TO BE DESIGNATED BY THE INSTITUTION Visual Environmental Adaptation Problems of Partial Sighted Santa Monica Medical Center Santa Monica, California	1493	285,000
	TO BE DESIGNATED BY THE INSTITUTION Braille Verifier for Blind Typists West Virginia University Morgantown, West Virginia	1494	30,000
Total Projects for Program: 90		Total Known Funding: 3,628,062	

## OTHER FEDERAL RESEARCH FUNDING

Department of Agriculture	HECK, F C Clinical and Biological Manifestations of Immunotherapy on Eye Cancer of Cattle Texas A & M University System College Station, Texas	1496	7
Department of Commerce	YONEMURA, G T Visual Environment National Bureau of Standards Washington, District of Columbia	1498	75,000
Department of Defense *	GOLDBERG, M F Physiology of the Pulvinas in the Awake Rhesus Monkey Armed Forces Radiology Research Institute Bethesda, Maryland	1500	149,000
Air Force	ALBERY, W B Recording and Modeling of Human Eye Movements — An Application to Undergraduate Pilot Training Wright-Patterson Air Force Base Dayton, Ohio	1501	7
	HARTZELL, E J Mechanisms of Nondestructive Countermeasures Against the Human Vision System Wright-Patterson Air Force Base Dayton, Ohio	1502	72,000
	TREDICI, T J Visual System Diseases in Aircrewmembers USAF School of Aerospace Medicine Brooks Air Force Base San Antonio, Texas	1503	38,000

\*This project was funded at the Department level.

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Department of Defense (Cont'd) Air Force (Cont'd)	TREDICI, T J Visual System Measurements, Techniques and Normal Values in Aircrewmembers USAF School of Aerospace Medicine Brooks Air Force Base San Antonio, Texas	1504	84,000
	WOLFE, J W Vestibular Neurophysiology in Prediction of Performance USAF School of Aerospace Medicine Brooks Air Force Base San Antonio, Texas	1505	63,000
Armed Forces Institute of Pathology	JACOBIEC, F A Report of a Case of Synophthalmia Columbia University New York, New York	1506	1,051
	POLSON, P Investigation of Ocular Effects of Chronic Exposure of Primates to Microwave Radiation at 2.45 GHz Stanford Research Institute Menlo Park, California	1507	65,982
Army	FISHER, D F Human Visual Aspects of the Army Soldier DARCOM Human Engineering Research Laboratory Aberdeen, Maryland	1508	95,000
	JAMPOLSKY, A D Influence of Socially Used Drugs on Vision and Vision Performance Optical Sciences Group, Inc. San Rafael, California	1509	17,920
	MARG, E Computer Controlled Ophthalmic Refraction University of California, Berkeley Berkeley, California	1510	71,000
	NODINE, C F Eye Movement Parameters in Information Processing Strategies in Visual Search Temple University Philadelphia, Pennsylvania	1511	9,000
	OATMAN, L C Auditory and Visual Interactions in Relation to Army Material Information Displays DARCOM Human Engineering Research Laboratory Aberdeen, Maryland	1512	283,000
	SHEENA, D The Performance of Experiments on Visual Search and Camouflage Whittaker Corporation Waltham, Massachusetts	1513	5,000
	WILEY, R W Research of Visual Problems Medically Significant to Army Aviation Ft. Rucker, Alabama	1514	390,000
Navy	BROWN, J L Personnel Technology: The Effects of Navy Hazardous Environments Upon Visual Tasks Rochester University Rochester, New York	1515	39,000
	CAMA, H Navy Environment: Changes in the Metabolism of Carotenoids and Vitamin A as a Result of Biochemical Adaptation Under Different Stress Conditions Indian Institute of Science Bangalore, India	1516	10,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Department of Defense (Cont'd) Navy (Cont'd)	CHISUM, G T Criteria Determination of the Adverse Effects of Light Adaptation in the Naval Aviator Naval Air Development Center Warminster, Pennsylvania	1517	28,000
	CLARKE, A M Navy Environment — Pupil Reflex as a Function of Photic Insult Resulting From Military Operations Virginia Commonwealth University Richmond, Virginia	1517a	6,223
	GRUBER, S H Navy Environment: Naval Swimmer/Diver Protection: Studies of Visual Perception in Sharks and Marine Mammals University of Miami Miami, Florida	1518	77,000
	KINNEY, J A Neurophysiological and Visual Performance Under Hyperbaric and Other Naval Operational Environments Naval Medical Research Laboratory Groton, Connecticut	1519	?
	KINNEY, J A Visual Requirements for Operators of Visual Sonar Displays Naval Medical Research Laboratory Groton, Connecticut	1520	32,000
	KISH, R Operational Analysis of Visual Problems Aboard Submarines Naval Medical Research Laboratory Groton, Connecticut	1521	46,000
	PAULSON, H M Development of Visual Screening, Display, and Illumination Standards for Submarine/Shipboard Personnel Naval Submarine Medical Center Groton, Connecticut	1522	61,000
	WHITCOMB, M A NAS/NRC Advisory Service on Navy Problems of Vision and Hearing National Academy of Sciences Washington, District of Columbia	1523	90,000
	WHITE, C T Personnel Technology—Cortical Evoked Potentials as Objective Indices of Man-System Interaction US Navy Human Factors Technology Division San Diego, California	1524	?
	UNKNOWN Mark II Integrated Driver Vision Tester Honeywell, Inc. Minneapolis, Minnesota	1525	?
Department of Transportation	UNKNOWN Headlight Factors and Nighttime Vision Honeywell, Inc. Minneapolis, Minnesota	1526	?
	UNKNOWN Driver Visual Limitations Diagnosis and Treatment Indiana University Indianapolis, Indiana	1527	?
	UNKNOWN Utility of Peripheral Vision to Motor Vehicle Drivers Ohio State University Columbus, Ohio	1528	?
	UNKNOWN Peripheral Vision Training for Motor Vehicle Drivers Human Factors Research, Incorporated Goleta, California	1529	?

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Aeronautics and Space Administration	BIZZI, E Role of Brain Areas Controlling Eye-Head Coordination in Monkeys Massachusetts Institute of Technology Cambridge, Massachusetts	1530	30,000
	CHOW, K L Neuronal Analysis of Visual Perception Stanford University Stanford, California	1531	2,000
	MARKHAM, C H Utricular Influences on Visual Motor Control Research University of California, Los Angeles Los Angeles, California	1532	19,000
	McNULTY, P J Particle-Induced Visual Sensations Clarkson College of Technology Potsdam, New York	1533	5,000
National Science Foundation	BAKER, F H Thalamic Mechanisms in Visual Processing Johns Hopkins University Baltimore, Maryland	1534	60,000
	BANKS, W P Visual Organization and Information Processing Claremont College Claremont, California	1535	65,200
	BECK, J Vernier Acuity as Affected by Adapting to Gratings University of Oregon Eugene, Oregon	1536	20,500
	BENEVENTO, L A Primary Sensory and Associational Systems in Primate University of Illinois Chicago, Illinois	1537	32,000
	BENEVENTO, L A Intracortical Inhibition and Excitation in Visual Cortex University of Illinois Chicago, Illinois	1538	14,000
	BERKLEY, M A Behavioral and Electrophysiological Correlates of Vision in Mammalian Visual System Florida State University Tallahassee, Florida	1539	22,500
	BISHOP, L G Visual Systems in the Context of Behavioral Responses University of Southern California Los Angeles, California	1540	25,000
	BLAKE, R Behavioral Studies of Spatial Vision Northwestern University Evanston, Illinois	1541	29,500
	BUTTER, C M Neurobehavioral Analysis of Cortical and Subcortical Visual Mechanisms University of Michigan Ann Arbor, Michigan	1542	30,600
	COOPER, L A Representation and Processing of Visual Information Cornell University Ithaca, New York	1543	37,500

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Science Foundation (Cont'd)	DAWSON, W W Cetacean Vision University of Florida Gainesville, Florida	1544	35,000
	DEVALOIS, R L Primate Vision University of California, Berkeley Berkeley, California	1545	35,000
	DUBIN, M W Development of Neural Networks in Vertebrate Visual System University of Colorado Boulder, Colorado	1546	60,000
	ESTES, W K Processes of Perception and Decision Rockefeller University New York, New York	1547	39,200
	GIRGUS, J S Etiology and Destruction of Visual Illusions City University of New York New York, New York	1548	19,000
	GLASER, L Embryonal Cell Structure Recognition Washington University St. Louis, Missouri	1549	35,000
	GRANT, P Optic Fiber Patterns and Ontogeny of Neuronal Connections University of Oregon Eugene, Oregon	1550	61,200
	GRAYBIEL, A M Anatomical Study of the Oculomotor System Massachusetts Institute of Technology Cambridge, Massachusetts	1551	53,800
	GROSS, C G Functions of Temporal Cortex in Visual Learning and Perception Princeton University Princeton, New Jersey	1552	55,000
	HALL, R W Research Initiation — Optimal Stimuli Distributions in Layered Structures Similar to Mammalian Visual System University of Pittsburgh Pittsburgh, Pennsylvania	1553	20,000
	HARVEY, L O Psychophysics of Form Perception University of Colorado Boulder, Colorado	1554	50,000
	HYATT, G W Visual Communications and Sociobiology of UCA Species University of Illinois Chicago, Illinois	1555	40,000
	INGLE, D J Visual Information Processing McLean Hospital, Massachusetts Belmont, Massachusetts	1556	30,000
	JACOBSON, M Development of Neuronal Specificity University of Miami Miami, Florida	1557	74,500
	JANDER, R Visual Pattern Perception and Orientation in Insects University of Kansas Lawrence, Kansas	1558	26,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Science Foundation (Cont'd)	JOHN, E R Brain Mechanisms Processing Visual Forms New York Medical College New York, New York	1559	30,000
	KINCHLA, R A Structural Redundancy in the Detection of Visual Targets Princeton University Princeton, New Jersey	1560	29,800
	KRANTZ, D H Psychophysical Study of Visual Codes and Their Interrelations University of Michigan Ann Arbor, Michigan	1561	29,000
	LAPPIN, J S Recognition of Spatial and Temporal Visual Patterns Vanderbilt University Nashville, Tennessee	1562	53,000
	MANSFIELD, R J Central Neural Mechanisms in Vision Harvard University Cambridge, Massachusetts	1563	20,000
	MARG, E Transformations for Visual Receptive Fields and Perpetual Constancies University of California, Berkeley Berkeley, California	1564	24,500
	MARKS, L E Psychophysics of Additivity in Sensory Systems John B Pierce Foundation of Connecticut	1565	33,800
	MASOFF, R W Adaptation Properties of Foveal and Peripheral Color Vision Johns Hopkins University Baltimore, Maryland	1566	42,900
	MATIN, L Dynamics of Visual Spatial Induction Long Island University Greenvale, New York	1567	27,700
	MURPHEY, R K Sensory Deprivation and Identified Neuron Function State University of New York	1568	45,100
	NACHMIAS, J Spatial Interaction in Human Vision University of Pennsylvania Philadelphia, Pennsylvania	1569	44,300
	NEISSER, U Selective Attention to Visually-Specified Events Cornell University Ithaca, New York	1570	17,800
	NICOL, J A Vision and Behavior University of Texas Austin, Texas	1571	17,200
	ORNITZ, E M Maturation of Vestibular Nystagmus in Humans University of California School of Medicine, Los Angeles Los Angeles, California	1572	20,050



Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Science Foundation (Cont'd)	PAK, W L Excitation Mechanisms in the Visual Pathway Purdue University Lafayette, Indiana	1573	60,000
	PALMER, L A Functional Connectivity in Visual Cortex University of Pennsylvania Philadelphia, Pennsylvania	1574	60,800
	POLLACK, I 'Perceptualization' of Statistical Information University of Michigan Ann Arbor, Michigan	1575	47,200
	RAYNER, K Foveal and Parafoveal Cues in Reading University of Rochester Rochester, New York	1576	67,000
	ROSENQUIST, A C Extrageniculate Visual Pathways University of Pennsylvania Philadelphia, Pennsylvania	1577	52,500
	SAVOIE, R E Experimental Simulation of an Optical Character Recognition/Speech Output Reading Machine for the Blind Telesensory Systems Incorporated Palo Alto, California	1578	78,400
	SCALIA, F The Visual System State University of New York Brooklyn, New York	1579	65,500
	SCHILLER, P H Restitution of Vision Following Visual Cortex Dysfunction Massachusetts Institute of Technology Cambridge, Massachusetts	1580	25,000
	SCHRIER, A M Role of Eye Movements in Processing Visual Information Brown University Providence, Rhode Island	1581	34,500
	SKAVENSKI, A A Processing of Eye Information for Visual Localizations Northeastern University Boston, Massachusetts	1582	44,300
	SMITH, K U Stereoscopic Tracking and Depth Perception and Displaced Monocular-Retinal Feedback University of Wisconsin Madison, Wisconsin	1583	13,000
	SMITH, R A Physiology of Visual Tuned Channels University of New Hampshire Durham, New Hampshire	1584	17,200
	STARK, W S Wavelength-Specific Visual Responses in Drosophila Johns Hopkins University Baltimore, Maryland	1585	17,700
	STREISINGER, G Development of a Genetic System for Neurobiology Studies University of Oregon Eugene, Oregon	1586	35,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Science Foundation (Cont'd)	TAYLOR, D A Recognition Behavior University of Rochester Rochester, New York	1587	25,000
	TELLER, D Y Vision in Human Infants University of Washington Seattle, Washington	1588	61,000
	TELLER, D Y Behavioral Studies of Normal Development and the Effects of Selective Visual Deprivation University of Washington Seattle, Washington	1589	50,500
	VOLKMANN, F C Visual Suppression During Saccadic Eye Movements Smith College Northampton, Massachusetts	1590	38,900
	WALLACH, H Perceptual Adaptation Swarthmore College Swarthmore, Pennsylvania	1591	20,200
	WARREN, R M Perception of Temporal Order University of Wisconsin, Milwaukee Milwaukee, Wisconsin	1592	21,000
	WEBER, R J Visual Image Masking Oklahoma State University Stillwater, Oklahoma	1593	15,150
	WEISSTEIN, N The Organization of Complex Visual Perception State University of New York Buffalo, New York	1594	40,400
	WILLIAMSON, S J Magnetic Fields Associated with Evoked Response New York University at Buffalo New York, New York	1595	25,300
	WILSON, M Cortical Function and Higher Mental Processes in Primates University of Connecticut Storrs, Connecticut	1596	27,500
Veterans Administration	CREEL, D J Visually Evoked Responses in Patients with Defects of the Visual Field Veterans Administration Hospital Phoenix, Arizona	1597	11,200
	DAROFF, R B Neurophysiology and Pathophysiology of Eye Movements Veterans Administration Hospital Miami, Florida	1598	11,200
	DAY, M E Eye Movement, Anxiety and Individual Differences in the Organization of Attentional Processes Veterans Administration Hospital Downey, Illinois	1599	11,200

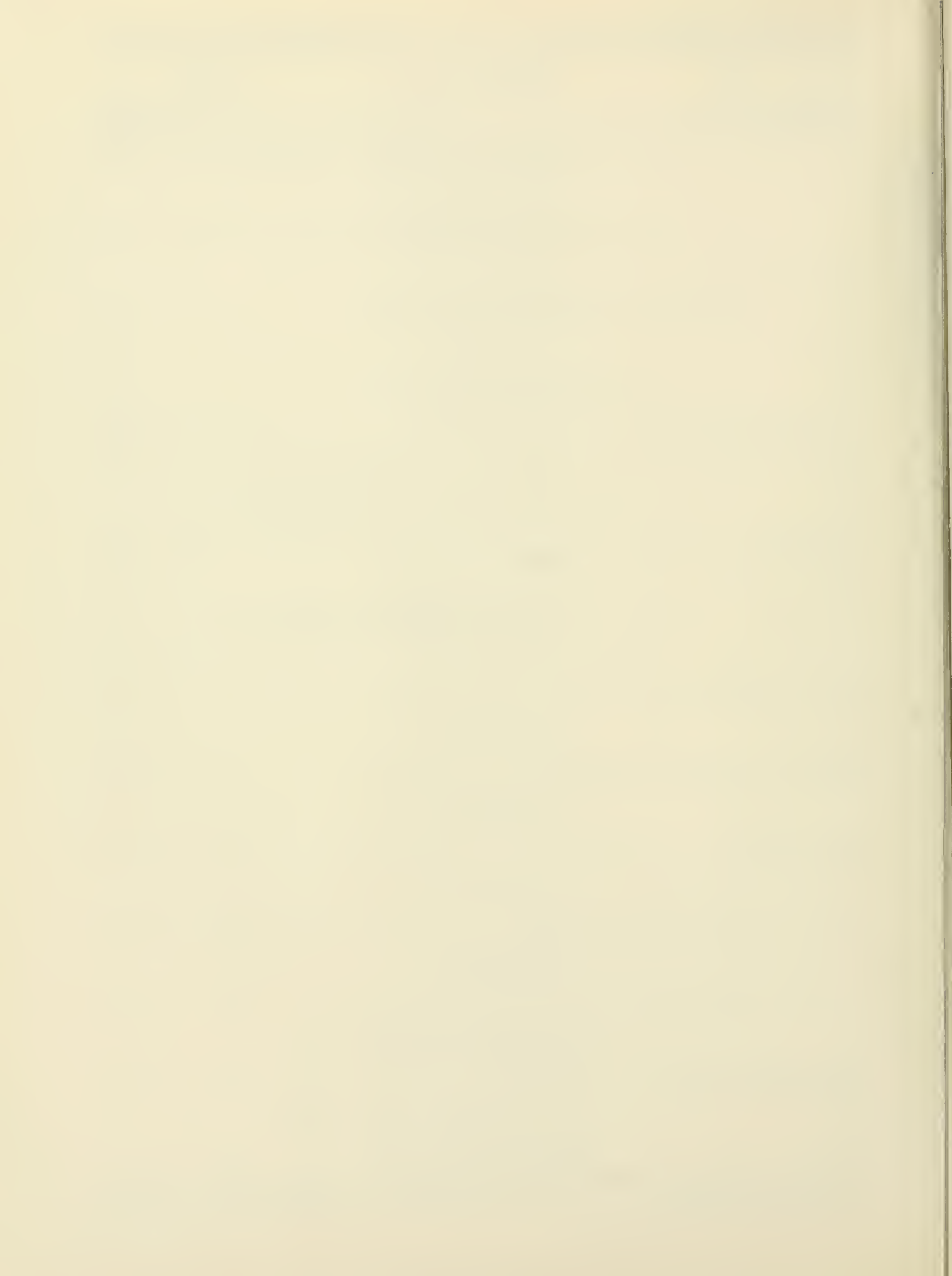
Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Veterans Administration (Cont'd)	DUSTMAN, R E Age Related Changes in the Visually Evoked Response to Patterned Stimulation Veterans Administration Hospital Salt Lake City, Utah	1600	11,200
	EFRON, R The Latency of Single Unit Discharges to the Effects of Visual Stimuli Veterans Administration Hospital Martinez, California	1601	11,200
	GOLDSTEIN, G Training Brain Damaged Patients on a Visual Searching Strategy Veterans Administration Hospital Topeka, Kansas	1602	11,200
	GOODE, R L The Use of Lidocaine and Hyperthermia in the Diagnosis of Central Vertigo Veterans Administration Hospital Palo Alto, California	1603	11,200
	GOODRICH, G L Eccentric Fixation Study Veterans Administration Hospital Palo Alto, California	1604	11,200
	HUBBARD, B Visual Cortical Evoked Potentials Veterans Administration Hospital San Diego, California	1605	11,200
	JUSTESEN, D R Neuropsychological Studies of Interocular Transfer Veterans Administration Hospital Kansas City, Missouri	1606	11,200
	KURTZKE, J F Thirty-Year Clinical Follow-up of Selected Demyelinating Diseases Veterans Administration Hospital Washington, District of Columbia	1607	11,200
	MORLEY, G K Effects of Brain Lesions on Visuo-Spatial Reception Veterans Administration Hospital Minneapolis, Minnesota	1608	11,200
	ROYER, F L Information Processing of Visual Information in Psycho- pathological Groups Veterans Administration Hospital Cleveland, Ohio	1609	11,200
	SACCOMANDO, R A Study Relating to Homonymous Hemianopsia in Hospitalized Stroke Patients Veterans Administration Hospital Buffalo, New York	1610	11,200
	SEYBOLD, M E Monitoring and Study of Extraocular Movement in Disorders of Eye Movement Control Veterans Administration Hospital San Diego, California	1611	11,200

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Veterans Administration (Cont'd)	SHURINA, M A Nystagmic Results with Aphasics and Alcoholics Veterans Administration Hospital Philadelphia, Pennsylvania	1612	11,200
	TRACHTENBERG, M C The Subcortical Fiber Connections in the Pulvinar Veterans Administration Hospital Boston, Massachusetts	1613	11,200
	Trobe, J Visual Function in the Patients with Intestinal Malabsorption Veterans Administration Hospital Gainesville, Florida	1614	11,200
	WIRTSCHAFTER, J D Experimental Papilledema and Axoplasmic Flow Veterans Administration Hospital Lexington, Kentucky	1615	11,200
Total Projects for Program: 119		Total Known Funding:	4,425,676

## NATIONAL PHILANTHROPIC AND VOLUNTARY AGENCY RESEARCH FUNDING

American Association of Workers for the Blind, Inc.	BLASC, B Workshop on Low Vision Mobility Intramural Project	1616	17,000
Cleveland Foundation	UNKNOWN Toward Support of Research in Diseases in the Eye Cleveland Clinic Hospital Cleveland, Ohio	1620	12,708
Fight for Sight, Inc.	ANTINONE, R J Force, Velocity and Electro-Myography Studies in Paralytic Strabismus Indiana University Indianapolis, Indiana	1621	5,000
	ARMETT-KIBEL, C Morphology of Synaptic Organization at the First Synaptic Level of the Visual Pathway Harvard University Cambridge, Massachusetts	1622	7,500
	COLMAN, D R Pretectal Region of the Squirrel Monkey Downstate Medical Center Brooklyn, New York	1623	1,050
	ELLENBERGER, C Oculomotor Effects of Cerebellar Lesions in Trained Monkeys Pennsylvania State University Hershey, Pennsylvania	1624	4,000
	HETHERINGTON, J Pathogenesis of Vascular Changes in the Optic Nerve Head in Capuchin Monkeys University of California, San Francisco San Francisco, California	1625	2,500
	PERLMUTTER, J Predictability of Multiple Sclerosis Washington University St. Louis, Missouri	1625a	7,500
	WIRTSCHAFTER, J D Axoplasmic Flow and the Pathogenesis of Papilledema University of Kentucky Lexington, Kentucky	1626	6,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Fight for Sight, Inc. (Cont'd)	WRAY, S H Demyelination of the Optic Nerve—An In Vivo Model Massachusetts General Hospital Boston, Massachusetts	1627	4,000
	ZEE, D S Function of Vestibulocerebellum in Eye Movement Control Johns Hopkins University Baltimore, Maryland	1628	2,877
Max C. Fleischmann Foundation	DOBELLE, W H Phase II of Electronic Vision Project University of Utah Salt Lake City, Utah	1654	178,000
	UNRESTRICTED GRANT National Federation of the Blind, Inc.	1655	100,000
	UNRESTRICTED GRANT Recording for the Blind, Inc.	1656	20,000
National Eye Research Foundation	MAY, C Research Project with a Major University Using Ophthalmologists and Optometrists to Explore the Entire Field of Eye Research	1657	10,000
National Society for the Prevention of Blindness, Inc.	TURNER, J E Regenerative Repair in the Vertebrate Optic Nerve Wake Forest University Winston-Salem, North Carolina	1659	5,000
Research Corporation	KECK, M J An Investigation of the Dependence of Human Visual Motion-Analyzing Mechanisms on the Spatial Characteristics of Simple Moving Stimuli John Carroll University Cleveland, Ohio	1661	8,145
Research to Prevent Blindness, Inc.	ROBINSON, D A Oculomotor Impairment Johns Hopkins University Baltimore, Maryland	1662	15,000
Seeing Eye, Inc.	PATZ, A To Be Determined by the Institution Johns Hopkins University Baltimore, Maryland	1664	50,000
Spencer Foundation	DEFRIES, J C Genetic Analysis of Reading Disabilities University of Colorado Boulder, Colorado	1665	46,700
	GROSS, C G Perceiving Mirror Images: A Developmental and Comparative Analysis Princeton University Princeton, New Jersey	1666	32,125
	PAYNE, M C Reading Difficulty and Cross-Modal Integration Georgia Institute of Technology Atlanta, Georgia	1667	27,875
William E. and Bertha F. Schrafft Charitable Trust	UNRESTRICTED GRANT Massachusetts Society for the Prevention of Blindness Boston, Massachusetts	1668	2,000
	UNRESTRICTED GRANT Massachusetts Eye and Ear Infirmary Boston, Massachusetts	1669	10,000
Total Projects for Program: 24		Total Known Funding:	574,980





## VI. Multiprogram Research Projects



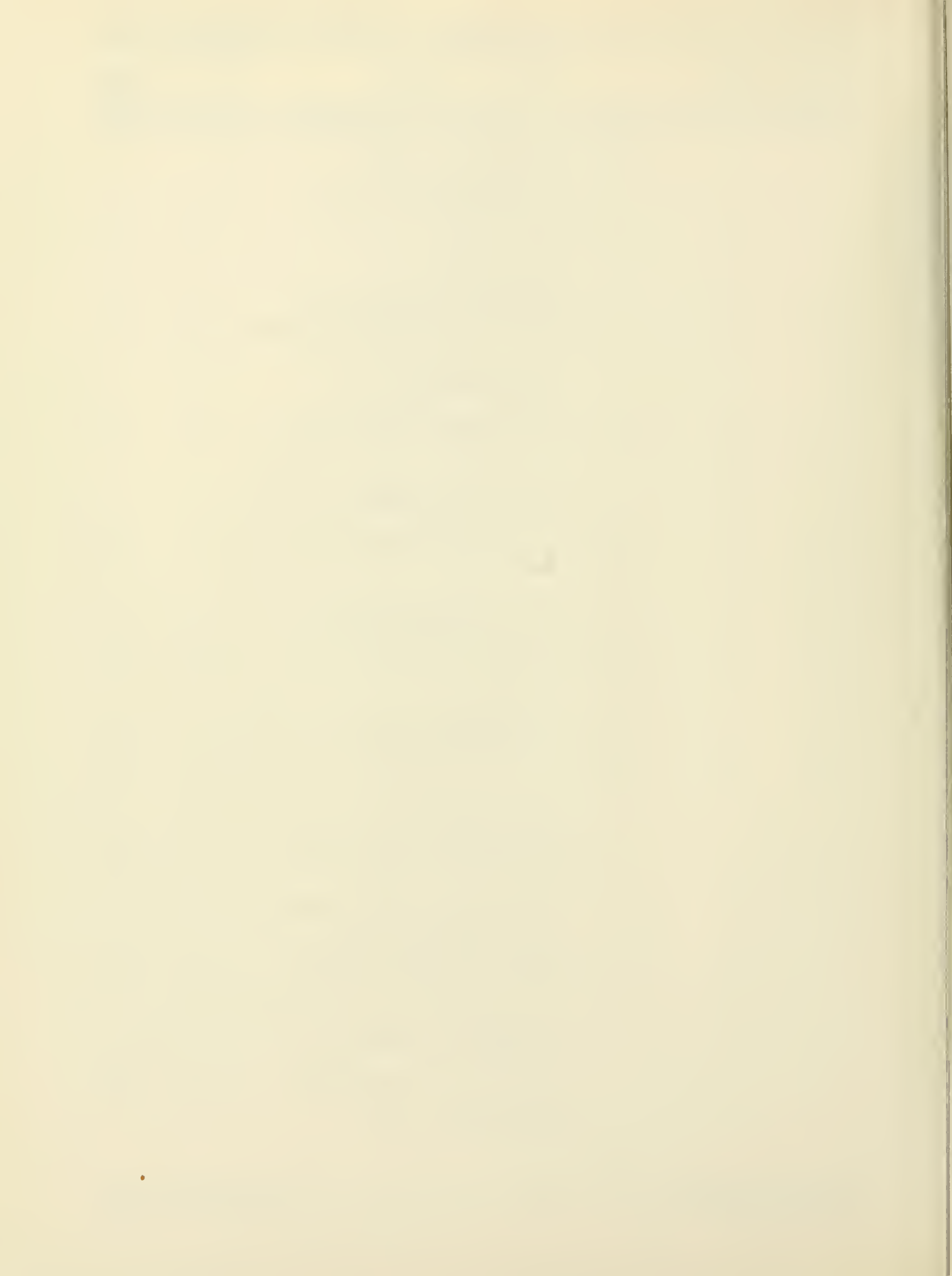
## VI. Multiprogram Research Projects

Supporting Organization	Principal Investigator Project Title Institution	Entry Number	FY 1976 Funding
Charles A. Dana Foundation	UNRESTRICTED GRANT New York Infirmary	1669a	10,000
	UNRESTRICTED GRANT New York Association for the Blind	1669b	10,000
	UNRESTRICTED GRANT New York Eye and Ear Infirmary	1669c	86,350
Research to Prevent Blindness, Inc. *	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY University of Arkansas	1670	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Baylor College of Medicine	1671	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Boston University	1672	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY University of California, Davis	1673	2,500
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY University of California, Los Angeles	1674	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH Francis I Proctor Foundation FOR RESEARCH IN OPHTHALMOLOGY University of California, San Francisco	1675	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY University of California, San Francisco	1676	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY University of Chicago, Chicago	1677	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY University of Colorado	1678	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Columbia University	1679	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Duke University	1680	5,000

\*This list does not include \$5,466,000 raised for building eye research centers during 1976 through RPB's laboratory construction program.

Supporting Organization	Principal Investigator Project Title Institution	Entry Number	FY 1976 Funding
Research to Prevent Blindness, Inc. (Cont'd)	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH Eye Research Institute of Retina Foundation	1681	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY University of Florida	1682	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Georgetown University	1683	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY George Washington University	1684	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Medical College of Georgia	1685	2,500
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Harvard University	1686	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY University of Illinois	1687	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Indiana University	1688	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY University of Iowa	1689	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Jefferson Medical College	1690	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Johns Hopkins University	1691	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY University of Louisville	1692	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY University of Maryland	1693	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY University of Miami	1694	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY University of Michigan	1695	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY University of Minnesota	1696	5,000

Supporting Organization	Principal Investigator Project Title Institution	Entry Number	FY 1976 Funding
Research to Prevent Blindness, Inc. (Cont'd)	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Mount Sinai School of Medicine	1697	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY New York University	1698	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY University of Oregon	1699	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY University of the Pacific, Institute of Medical Sciences	1700	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY University of Pennsylvania	1701	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Stanford University	1702	2,500
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Tufts New England Medical Center	1703	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Tulane University	1704	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Union University (Albany Medical College)	1705	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Vanderbilt University	1706	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Washington University	1707	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY University of Washington	1708	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Wayne State University	1709	2,500
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Medical College of Wisconsin	1710	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY University of Wisconsin	1711	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Yale University	1712	5,000
	GRANT FOR UNRESTRICTED OPHTHALMIC RESEARCH BY THE DEPARTMENT OF OPHTHALMOLOGY Yeshiva University Albert Einstein College of Medicine	1713	5,000



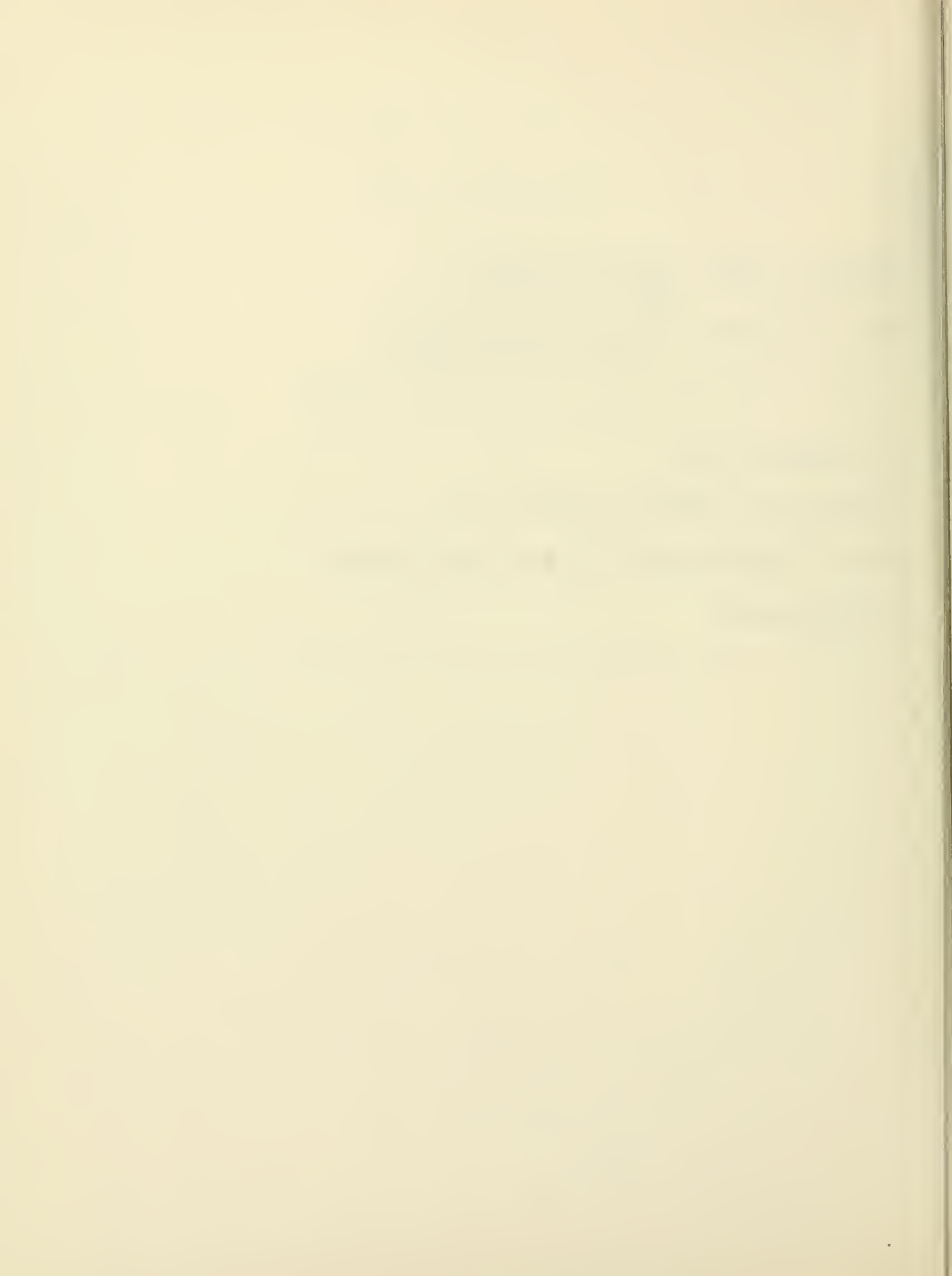


# Research Sponsored by Other Organizations

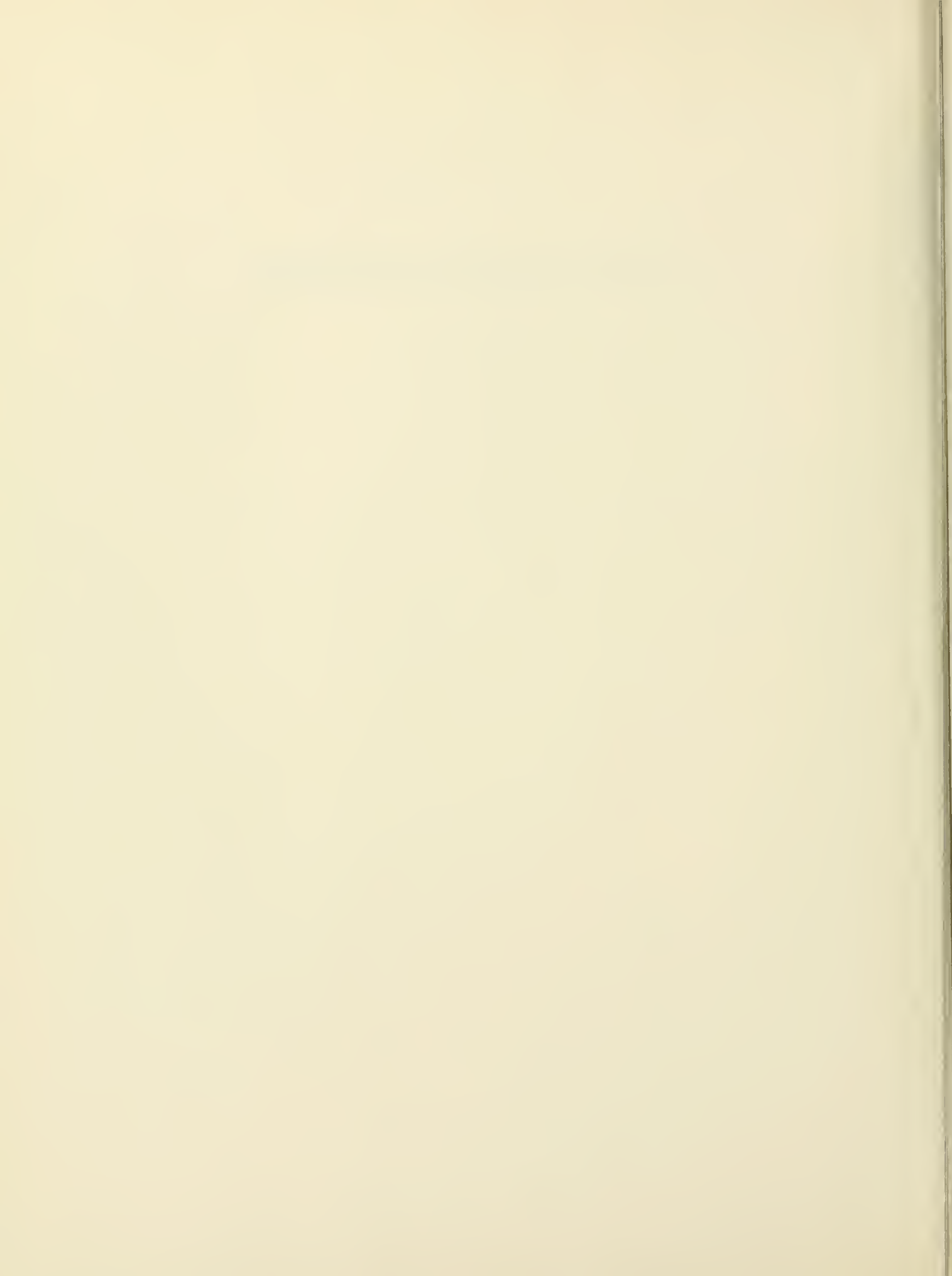
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## Projects of Indirect Relevance to the National Eye Institute Program

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## I. Retinal and Choroidal Diseases



# I. Retinal and Choroidal Diseases

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) EXTRAMURAL RESEARCH FUNDING			
National Cancer Institute	BITENSKY, M W Coordinated Interaction of Plasma Membrane Proteins Yale University New Haven, Connecticut	1714	104,914
	JOHNSON, W G Genetic Neural Tumors—Cell Surface Alterations Columbia University New York, New York	1715	42,420
	MASLOW, D E Specificity of Normal and Cancer Cell Interactions Roswell Park Memorial Institute Buffalo, New York	1716	26,731
	McMILLAN, C W Collaborative Studies in the Southwest Oncology Group University of North Carolina Chapel Hill, North Carolina	1717	38,083
National Heart, Lung, and Blood Institute	BROWN, D M Diabetic Vascular Disease University of Minnesota Minneapolis, Minnesota	1718	51,494
	CHRISTLIEB, A R Angiotensin and Hypertension Joslin Diabetes Foundation Boston, Massachusetts	1719	60,732
	COTRAN, R Endothelium Harvard University Cambridge, Massachusetts	1720	27,417
	GLUECK, H I Determination of Natural Clotting Factors University of Cincinnati Cincinnati, Ohio	1721	71,999
	HOWARD, C F, JR Risk Factors and Atherosclerosis in Diabetic Monkeys Medical Research Foundation of Oregon Beaverton, Oregon	1722	67,867
	LAWTON, I Neural and Vascular Feedbacks in Endocrinology Loyola University Medical Center Maywood, Illinois	1723	57,000
	LUTCHER, C L Clinical Services—Adult Patients Medical College of Georgia Augusta, Georgia	1724	63,349

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Heart, Lung, and Blood Institute (Cont'd)	MILLER, D R Desferrioxamine Therapy in Thalassemia Cornell University Medical Center New York, New York	1725	102,939
	PALUMBO, P J Peripheral Arterial Disease in the Diabetic Mayo Foundation Rochester, Minnesota	1726	307,148
	PETERSON, L H Vestibular Function Derangement During Isobaric Gas Counterdiffusion University of Pennsylvania Philadelphia, Pennsylvania	1727	8,761
	PIOMELLI, S Reduction of Iron Overload in Thalassemia New York University New York, New York	1728	65,951
	ROSENMAN, R H Central Nervous System and Coronary Heart Disease Mount Zion Hospital and Medical Center San Francisco, California	1729	66,799
	SIDBURY, J B Environmental Biomedical Research Program: Pediatrics Duke University Durham, North Carolina	1730	69,185
	SOKOLOW, M Clinical Application of Ambulatory Blood Pressures University of California, San Francisco San Francisco, California	1731	79,373
	STOECKENIUS, W Purple Membrane of Halobacteria University of California, San Francisco San Francisco, California	1732	66,318
	ZWEIFACH, B W Microcirculation of Patients with Diabetes Mellitus University of California, San Diego La Jolla, California	1733	76,964
National Institute of Arthritis, Metabolism, and Digestive Diseases	ALBRINK, M J Serum Triglycerides and Diabetic Complications West Virginia University Morgantown, West Virginia	1734	37,856
	BECKER, F O University Group Diabetes Project Rush-Presbyterian-St. Luke's Medical Center Chicago, Illinois	1735	5,384
	BOSHELL, B R University Group Diabetes Project University of Alabama Birmingham, Alabama	1736	8,268
	BUSE, M G Factors that Modify Insulin Action Medical University of South Carolina Charleston, South Carolina	1737	57,394



Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Arthritis, Metabolism, and Digestive Diseases (Cont'd)	CHVAPIL, M Lysyl Oxidase in Health and Disease Arizona Medical Center Tucson, Arizona	1738	102,507
	CLARK, C C Incorporation and Role of Carbohydrate Moieties in Procollagen Philadelphia General Hospital Philadelphia, Pennsylvania	1739	81,230
	DAUGHADAY, W H University Group Diabetes Project Washington University St. Louis, Missouri	1740	3,190
	DAVIDSON, P C University Group Diabetes Project West Virginia University Morgantown, West Virginia	1741	7,928
	GABBAY, K H Neuropathy in Diabetes—Role of Sorbitol Pathway Children's Hospital Medical Center Boston, Massachusetts	1742	48,356
	HAODOCK, L University Group Diabetes Project University of Puerto Rico San Juan, Puerto Rico	1743	8,192
	HEGRE, O D Selective Differentiation—Human Islet Organ Culture University of Minnesota Minneapolis, Minnesota	1744	42,805
	JACOBSON, M E University Group Diabetes Project University of Minnesota Minneapolis, Minnesota	1745	10,385
	JOIST, J H Hemostatic Alterations in Diabetes Mellitus Washington University St. Louis, Missouri	1746	74,343
	Jonasson, O Diabetes and Islet Cell Studies in the Primate University of Illinois Chicago, Illinois	1747	103,920
	KEFALIDES, N A Structure of Basement Membrane Philadelphia General Hospital Philadelphia, Pennsylvania	1748	81,230
	KLIMT, C R University Group Diabetes Project University of Maryland Baltimore, Maryland	1749	135,356
	KNOWLES, H C, JR University Group Diabetes Project University of Cincinnati Cincinnati, Ohio	1750	4,135

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Arthritis, Metabolism, and Digestive Diseases (Cont'd)	LIU, R S New Geometric Isomers of Vitamin A and Carotene University of Hawaii Manoa, Hawaii	1751	73,348
	MARTIN, D B University Group Diabetes Project Massachusetts General Hospital Boston, Massachusetts	1752	16,807
	MILLER, M University Group Diabetes Project Case Western Reserve University Cleveland, Ohio	1753	15,281
	NAJARIAN, J S Transplantation in Diabetic Patients University of Minnesota Minneapolis, Minnesota	1754	9,075
	NAJARIAN, J S Studies of Organ Transplantation: Viral Infections University of Minnesota Minneapolis, Minnesota	1755	9,075
	NIELSON, R L University Group Diabetes Project Virginia Mason Research Center Seattle, Washington	1756	8,889
	PROCKOP, D J Enzymic Steps in Collagen Biosynthesis Rutgers Medical School Piscataway, New Jersey	1757	46,170
	PROUT, T E University Group Diabetes Project Greater Baltimore Medical Center Baltimore, Maryland	1758	10,458
	SPIRO, R G Studies on the Structure of Glycoproteins Joslin Diabetes Foundation, Inc. Boston, Massachusetts	1759	63,895
	WEISENFELD, S University Group Diabetes Project Jewish Hospital and Medical Center Brooklyn, New York	1760	15,060
	WITKOP, C J, JR Pigment Metabolism, Clinical and Metabolic Studies University of Minnesota Minneapolis, Minnesota	1761	5,572
	WITKOP, C J, JR Pigment Metabolism Morphologic Studies University of Minnesota Minneapolis, Minnesota	1762	5,572

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Arthritis, Metabolism, and Digestive Diseases (Cont'd)	WITKOP, C J, JR Clinical and Genetic Studies of the Hermansky-Pudlak Syndrome University of Minnesota Minneapolis, Minnesota	1763	5,572
National Institute of Allergy and Infectious Diseases	BATRA, P P Biosynthesis of Carotenes in Mycobacteria Wright State University Dayton, Ohio	1764	25,161
National Institute of Neurological and Communicative Disorders and Stroke	BROWN, A H Ionic Movements Across Nerve Cell Body Membranes University of Texas Galveston, Texas	1765	59,019
	BROWN, H M Transduction Mechanism in Photoreceptors University of Utah Salt Lake City, Utah	1766	62,023
	COSTELLO, M J Position Sensitive Proportional Counter System for X-Ray Diffraction Duke University Durham, North Carolina	1767	20,956
	GAMBETTI, P Studies on Synaptosomes and Axons University of Pennsylvania Philadelphia, Pennsylvania	1768	150,202
	GORDON-LICKEY, M Neural Mechanisms of Circadian Rhythms University of Oregon Eugene, Oregon	1769	44,599
	KARTEN, H Anatomical Organization of the Brain State University of New York at Stony Brook Stony Brook, New York	1770	39,457
	LOWRY, O H Metabolism of Cells and Parts of Cells in Nervous Tissue Washington University St. Louis, Missouri	1771	52,508
	NELSON, E R Cerebrovascular Clinical Research Center University of Maryland Baltimore, Maryland	1772	323,828
	POTTER, H D Dynamic Aspects of Neurofilaments and Microtubules Indiana University Indianapolis, Indiana	1773	58,130
	STOFFYN, P J Chemistry of Glycolipids Eunice Kennedy Shriver Center for Mental Retardation Waltham, Massachusetts	1774	57,504
	WASSERMAN, G S Intracellular Studies of Temporal Summation Purdue University Lafayette, Indiana	1775	32,859

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Neurological and Communicative Disorders and Stroke (Cont'd)	WEISS, B Comparative Studies on Mammalian Nervous System University of Rochester Rochester, New York	1776	22,249
	WORTHINGTON, C R Molecular Structure of Nerve and Photoreceptors Carnegie-Mellon University Pittsburgh, Pennsylvania	1777	63,589
National Institute of Child Health and Human Development	MOSCONA, A A Cellular and Molecular Controls in Neurodifferentiation University of Chicago Chicago, Illinois	1778	147,327
	ROTH, S A Morphogenesis in Embryonic and Pathological Systems Johns Hopkins University Baltimore, Maryland	1779	64,449
National Institute of General Medicine Sciences	ANDERSON, D E Role of Germinal Mutations in Cancer University of Texas Health Science Center Houston, Texas	1780	65,933
	BUTLER, W L Photoreceptor Pigments in Photoreceptive Organisms University of California, San Diego La Jolla, California	1781	25,252
	DELBRUCK, M Light Growth Response Channel of Phycomyces California Institute of Technology Pasadena, California	1782	44,247
	PALUMBO, P J Diabetes Mellitus Mayo Foundation Rochester, Minnesota	1783	24,258
	WOOLF, C M Behavior Genetics-Phototaxis-Geotaxis in Drosophila Arizona State University Tempe, Arizona	1784	25,905
National Institute of Environmental Health Sciences	WEISSE, K Laser Radiation in Photochemistry and Photobiology Northeastern University Boston, Massachusetts	1785	37,990
National Institute on Aging	LETT, J T Aging, Radiation and DNA Damage in Nondividing Tissue Colorado State University Fort Collins, Colorado	1786	71,715
Division of Research Resources	DOE, R P Studies of Kindred with Diabetes and Other Endocrinopathies University of Minnesota Minneapolis, Minnesota	1787	22,718
	FREIDES, D Behavioral Changes Associated with Hepatic Encephalopathy Emory University Atlanta, Georgia	1788	10,484
Total Projects for Program: 75		Total Known Funding:	4,105,059

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
<b>NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) RESEARCH CONTRACT FUNDING</b>			
National Heart, Lung, and Blood Institute	CERAMI, A Effects of Cyanate in Sickle Cell Disease Therapy Rockefeller University New York, New York	1789	122,000
	GOLDBERG, M F Studies in Sickle Cell Disease University of Illinois Medical Center Chicago, Illinois	1790	105,000
	JENSEN, W N Studies in Sickle Cell Disease George Washington University Washington, District of Columbia	1791	2,600
	LAING, R A Noninvasive Measurement of Vascular Conditions Boston University School of Medicine Boston, Massachusetts	1792	79,000
National Institute of Arthritis, Metabolism, and Digestive Diseases	HOUSER, H B Pathogenesis of Diabetes in Gila River Indians Case Western Reserve University Cleveland, Ohio	1793	46,530
Total Projects for Program: 5		Total Known Funding:	355,130

**NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) INTRAMURAL RESEARCH PROJECTS**

National Heart, Lung, and Blood Institute	DANIELS, M Ultrastructure of Neuroblastoma Somatic Cell Hybrids	1794	?
	DANIELS, M Acetylcholine Receptors	1795	46,000
	HELDMAN, E Gene Expression for Neural Properties	1796	27,000
National Institute of Arthritis, Metabolism, and Digestive Diseases	SHARPLESS, N E The Influence of Molecular Structure on Chemical and Biological Properties	1797	?
National Institute of Neurological and Communicative Disorders and Stroke	HORTON, W Von Hippel-Lindau Syndrome—Clinical, Genetic and Biochemical Aspects	1798	12,625
Total Projects for Program: 5		Total Known Funding:	85,625

**DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE (EXCLUSIVE OF NIH) RESEARCH FUNDING**

National Institute of Mental Health	COHEN, P S Determinants of Attack Behavior Northeastern University Boston, Massachusetts	1799	18,647
National Institute of Occupational Safety and Health	SENSINTAFFAR, E Occupational Radiation Exposure from Welding Arcs Intramural Project	1800	58,000
Total Projects for Program: 2		Total Known Funding:	76,647

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
<b>OTHER FEDERAL RESEARCH FUNDING</b>			
Department of Agriculture	BALL, H J Photosensitivity in Insects University of Nebraska Lincoln, Nebraska	1801	?
	BLANKENHORN, D Effect of Diet on Hypertension in Humans University of California, Los Angeles Los Angeles, California	1802	?
	HARRISON, P G Photoreception and Biological Rhythms University of Illinois, Urbana Urbana, Illinois	1803	90,580
	LITTLE, A C The Measurement of Color in Food University of California, Berkeley Berkeley, California	1804	?
	PARDINI, R S A Pharmacological Investigation of Larrea Divaricata: Antineoplastic Properties University of Nevada Reno, Nevada	1805	?
	WITZEL, D A Neurological and Physiological Effects of Toxic Agricultural Chemicals in Domestic Animals Texas A & M University College Station, Texas	1806	276,182
Department of Defense Air Force	BURNS, J W Physiologic Responses to Sustained Acceleration U.S. Air Force School of Aerospace Medicine Brooks Air Force Base San Antonio, Texas	1807	?
Army	ROSE, N R Cellular and Humoral Immunity in Parasitic Infections Edward J. Meyer Medical Hospital Buffalo, New York	1808	29,896
	SAUBERLICH, H E The Molecular Basis of Vitamin A Activity Letterman Army Institute of Research San Francisco, California	1809	50,000
	TsOU, K C Cytochemical Study Related to Laser Application University of Pennsylvania Philadelphia, Pennsylvania	1810	23,221
Energy Research and Development Administration	SCHOENBORN, B P Low Angle Neutron Diffraction Studies on Biologically Complex Structures Brookhaven National Laboratory Upton, New York	1811	40,000
	SPIKES, J D Energy Transfer Mechanisms in Photobiological Reactions University of Utah Salt Lake City, Utah	1812	22,429



Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Aeronautics and Space Administration	BOND, V P Study of Particle-Induced Visual Sensations Brookhaven National Laboratory Upton, New York	1813	5,000
National Science Foundation	ADLER, K K Light Receptors and Mechanisms for Orientation in Amphibians and Reptiles Cornell University Ithaca, New York	1814	28,500
	BEDNAREK, A R The Role of Relational Composition in Effecting Simultaneous or Parallel Mathematical Operations on Electronic Devices State University of Florida Gainesville, Florida	1815	17,950
	BURNSIDE, M B Studies on Cell Motility and Development Bermuda Biological Station for Research St. George, Bermuda	1816	25,000
	CASE, J F Neurophysiological Basis of Bioluminescent Communication University of California Santa Barbara, California	1817	13,000
	DELBRUCK, M Sensory Transducer Mechanisms California Institute of Technology Pasadena, California	1818	75,000
	DEVAULT, D C Biological Reactions of Less Than Microsecond Halftimes University of Pennsylvania Philadelphia, Pennsylvania	1819	35,000
	ERLANGER, B F Interactions with the Active Sites of Biological Receptors Columbia University New York, New York	1820	25,000
	FEHER, G Primary Processes in Bacterial Photosynthesis University of California, San Diego La Jolla, California	1821	70,000
	HALL, L Acetylcholine Receptors in Drosophila Massachusetts Institute of Technology Cambridge, Massachusetts	1822	55,000
	HARRISON, S C Differentiated Membrane Assembly and Interactions Harvard University Cambridge, Massachusetts	1823	73,400
	HSIAO, H S Mechanisms of Phototaxis University of North Carolina Chapel Hill, North Carolina	1824	30,000
	KENDE, A S Sixth IUPAC Symposium on Photochemistry, July 19-23, 1976, Aix-En-Provence, France University of Rochester Rochester, New York	1825	2,000

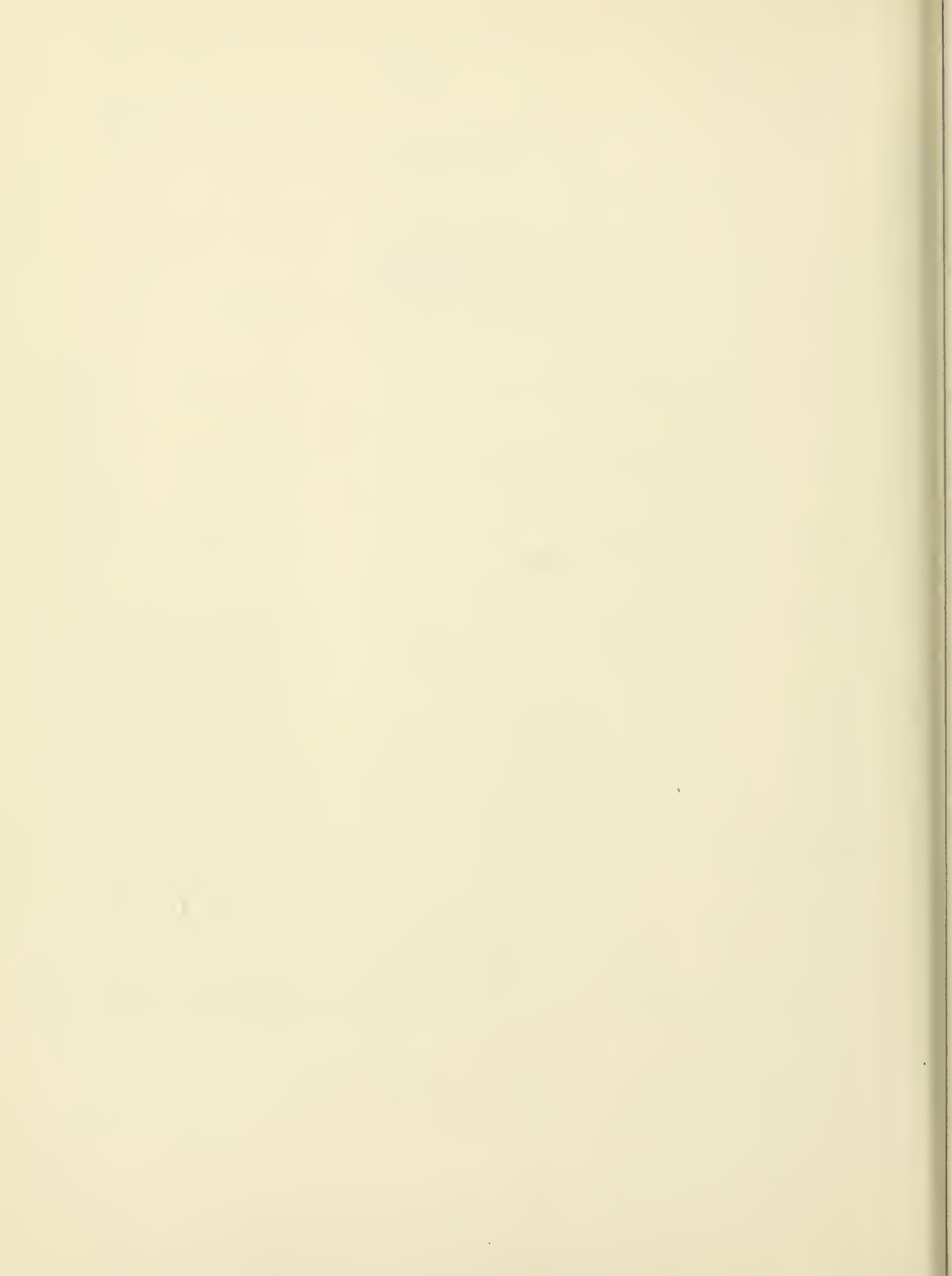
Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Science Foundation (Cont'd)	LINDBERG, D C A History of Optics University of Wisconsin Madison, Wisconsin	1826	8,650
	LITMAN, B J Interaction of Macromolecules with Membranes University of Virginia Charlottesville, Virginia	1827	32,000
	MALKIN, R Photochemical and Electron Transport Reactions in Chloroplast Photosynthesis University of California, Berkeley Berkeley, California	1828	22,000
	RILLEMA, J A Procurement of Gas Chromatography Equipment Wayne State University Detroit, Michigan	1829	12,000
	WHITT, G S Differential Expression of Homologous Genes During Development University of Illinois, Urbana Urbana, Illinois	1830	22,450
Veterans Administration	HARKNESS, D R Pathophysiology and Treatment of Sickle Cell Anemia Veterans Administration Hospital Miami, Florida	1831	11,200
	SCHWARZ, K Trace Factors in Metabolic and Degenerative Diseases Veterans Administration Hospital Long Beach, California	1832	11,200
	SMITH, J C Trace Element Metabolism Veterans Administration Hospital Washington, District of Columbia	1833	11,200
	YUWILER, A Studies on the Harderian Gland Veterans Administration Center Los Angeles, California	1834	11,200
Total Projects for Program: 34		Total Known Funding:	119,058

## NATIONAL PHILANTHROPIC AND VOLUNTARY AGENCY RESEARCH FUNDING

American Cancer Society	PAPERMASTER, D S Membrane Biosynthesis in Neoplastic and Normal Cells Yale University New Haven, Connecticut	1835	38,403
Total Projects for Program: 1		Total Known Funding:	38,403

## II. Corneal Diseases

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## II. Corneal Diseases

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) EXTRAMURAL RESEARCH FUNDING			
National Cancer Institute	GILLETTE, E L Radiation Repair of Normal Mammalian Tissues Colorado State University Fort Collins, Colorado	1837	64,241
National Institute of Allergy and Infectious Diseases	BANG, F B International Center for Medical Research Johns Hopkins University Baltimore, Maryland	1838	358,283
	BARRON, A L Chlamydial Genital Infection—An Animal Model System University of Arkansas Little Rock, Arkansas	1839	23,333
	GREEN, S B Therapy of Herpes Infections University of Miami Miami, Florida	1840	51,280
	MOULOER, J W Phagocytosis of Chlamydiae University of Chicago Chicago, Illinois	1841	51,673
	SCHACHTER, J Serotyping of Chlamydia (Bedsonia) Isolates University of California, San Francisco San Francisco, California	1842	39,565
National Institute of Neurological and Communicative Disorders and Stroke	ABOEL-LATIF, A A Amine Neurotransmitters and Turnover of Lipid, Protein Phosphate Medical College of Georgia Augusta, Georgia	1843	43,829
National Institute of Child Health and Human Development	COHEN, S Epidermal Growth Factor Vanderbilt University Nashville, Tennessee	1844	85,541
National Institute of Dental Research	SORGENTE, N Role of Vascularization During Craniofacial Development University of Southern California Los Angeles, California	1845	43,059
National Institute of General Medical Sciences	JACKSON, M J Drug Transport in the Gastrointestinal Tract and Other Epithelia George Washington University Washington, District of Columbia	1846	20,400
	WITKOP, C J, JR Albinism University of Minnesota Minneapolis, Minnesota	1847	110,000
Total Projects for Program: 11		Total Known Funding:	891,204

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
<b>NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) INTRAMURAL RESEARCH PROJECTS</b>			
National Cancer Institute	BREM, S Neovascularization—An Early Event in Neoplasms of the Human Mammary Gland	1848	?
	PARSEGIAN, V A Influence of Electric Forces on the Organization of Proteins and Model Systems	1849	?
National Institute of Allergy and and Infectious Diseases	LEVY, H B Studies on the Treatment of Disease with the Interferon System	1850	139,140
National Institute of Dental Research	HAND, A R Ultrastructure and Cytochemistry of Salivary Glands	1851	?
Total Projects for Program: 4		Total Known Funding:	139,140

**OTHER FEDERAL RESEARCH FUNDING**

Consumer Product Safety Commission	BAYARD, S Evaluation of Proposed Changes in the Modified Draize Rabbit Irritation Test Intramural Project	1852	20,000
Department of Agriculture	ANTHONY, H D Bacterial Diseases Kansas State University Manhattan, Kansas	1853	?
	CARMICHAEL, L E Infectious and Metabolic Diseases Cornell University Ithaca, New York	1854	?
	SNODDY, E L Bionomics, Taxonomy and Control of Eye Gnats in Industrial and Outdoor Recreational Areas Georgia Coastal Plain Experiment Station Tifton, Georgia	1855	?
	WATSON, D F Disease as a Deterrent to Increased and More Efficient Animal Production Virginia Polytechnic Institute Blacksburg, Virginia	1856	?
Department of Defense Army	WITHERUP, S The Toxicity and Irritancy of Ultrafiltrates of Non-Sanitary Military Waste University of Cincinnati Medical Center Cincinnati, Ohio	1857	20,000
Navy	KHALIL, H M Navy Environment: Immunological Study of Navy-Relevant Parasitic Worm Infestations Ain Shams University Cairo, Egypt	1858	31,000
	LOVELESS, M Navy Environment: Development of a Standard Procedure for the Rapid Desensitization of Personnel about to be Exposed to Specific Allergens Not Designated Westport, Connecticut	1859	16,000



Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Energy Research and Development Administration	LEITH, J T Long-Term Effects of Accelerated Particles and Environmental Agents on Epithelial Tissues University of California, Berkeley Berkeley, California	1860	8,000
Veterans Administration	BLUESTONE, R Infectious Antigens and the Rheumatoid Variants Veterans Administration Center Los Angeles, California	1861	11,200
	REED, W P Local and Systemic Defense Mechanisms in Shigellosis Veterans Administration Hospital Albuquerque, New Mexico	1862	11,200
	THALER, R A Histological Study in Healing of Periodontal Bony Defects Using Glycol Methacrylate Collagen Sponge and Sclera as Implants Veterans Administration Hospital Northport, New York	1863	11,200
	VOGEL, R A Opportunistic Yeast Infection in Man—Clinical and Laboratory Observations on Candidiasis and Cryptococcosis Veterans Administration Hospital Decatur, Georgia	1864	11,200
Total Projects for Program: 13		Total Known Funding:	139,800

NATIONAL PHILANTHROPIC AND VOLUNTARY AGENCY RESEARCH FUNDING

American Cancer Society	COHEN, S Etiology and Evolution of Plasmids Vanderbilt University Nashville, Tennessee	1865	95,981
Total Projects for Program: 1		Total Known Funding:	95,981



### III. Cataract



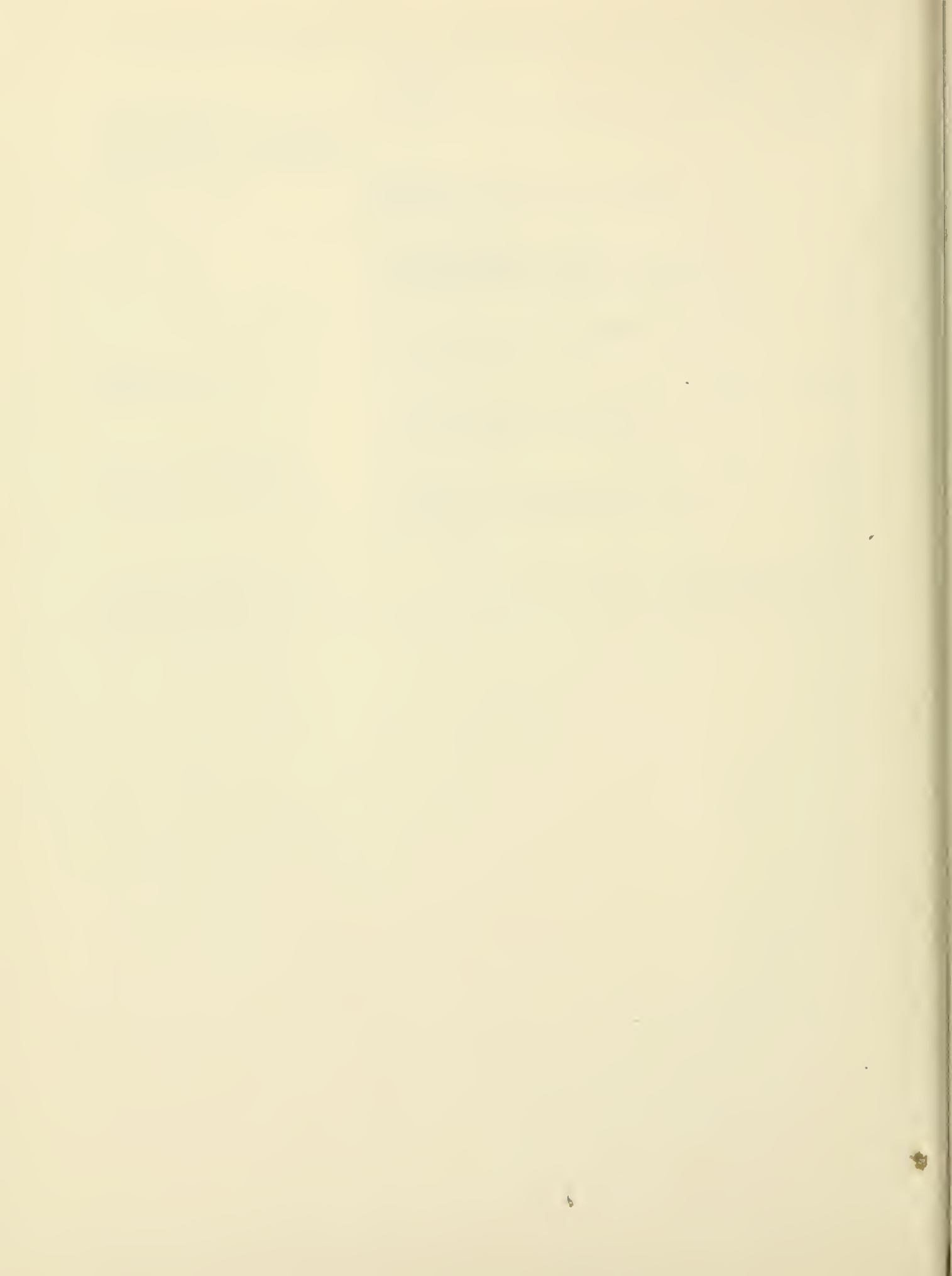
### III. Cataract

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) EXTRAMURAL RESEARCH FUNDING			
National Institute of Arthritis, Metabolism, and Digestive Diseases	TEDESCO, T A Characteristics of Galactose Enzyme Mutants in Man State University of Florida Tampa, Florida	1867	69,815
National Institute of General Medical Sciences	HOLLOWAY, G A Clinical Demonstration Unit University of Washington Seattle, Washington	1868	86,942
	YU, N-T Laser-Excited Raman Spectroscopy of Biopolymers Georgia Institute of Technology Atlanta, Georgia	1869	34,000
National Institute of Environmental Health Sciences	EISENBUD, M Biological Effects of Microwave Radiation New York University Medical Center New York, New York	1870	25,664
Total Projects for Program: 4		Total Known Funding:	216,421
NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) INTRAMURAL RESEARCH PROJECTS			
National Institute of Allergy and Infectious Diseases	TULLY, J G Basic Studies on Mycoplasmas	1871	52,940
National Institute of Child Health and Human Development	NEBERT, D W Pharmacogenetics	1872	43,000
Total Projects for Program: 2		Total Known Funding:	95,940
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE (EXCLUSIVE OF NIH) RESEARCH FUNDING			
Food and Drug Administration	EISENBUD, M Microwaves—Environmental Factor—A Molecular View New York University New York, New York	1873	72,158
Social and Rehabilitation Service	GUY, A W Program on the Quantitation of the Effects of Electro- magnetic Energy of Human Tissue University of Washington Seattle, Washington	1874	76,478
Total Projects for Program: 2		Total Known Funding:	148,636

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
<b>OTHER FEDERAL RESEARCH FUNDING</b>			
Department of Agriculture	HUDSON, B G Studies on the Structure of Basement Membrane Oklahoma State University Stillwater, Oklahoma	1875	?
	LEVANDER, O A Stress and Nutritional Need for Vitamin E and Selenium Intramural Project	1876	?
	SHOFFNER, R N Genetic Variation Influencing Economic Traits in Fowl University of Minnesota St. Paul, Minnesota	1877	?
Department of Defense Air Force	BONNEY, C H Long-Term Radiation Effects U.S. Air Force School of Aerospace Medicine Brooks Air Force Base San Antonio, Texas	1878	221,000
Energy Research and Development Administration	RILEY, E F A Comparison of the Cytological Effects Produced by Ionizing Radiations of Different LET University of Iowa Iowa City, Iowa	1879	16,050
Total Projects for Program: 5		Total Known Funding: 237,050	



## IV. Glaucoma



## IV. Glaucoma

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) INTRAMURAL RESEARCH PROJECT			
Division of Research Services	BORETOS, J W Implant Device Development	1880	9,000
Total Projects for Program: 1		Total Known Funding:	9,000



## V. Sensory and Motor Disorders of Vision





## V. Sensory and Motor Disorders of Vision

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) EXTRAMURAL RESEARCH FUNDING			
National Cancer Institute	BUTLER, J E BAMP Tumor Antigens—Distribution and Immunochemistry University of Iowa Iowa City, Iowa	1881	35,812
	DUPONT, B Histocompatibility Testing in Clinical Research and Therapy Memorial Hospital New York, New York	1882	29,847
	HUANG, S Monocyte and T-Lymphocyte Receptors in Malignancy University of Maryland Baltimore, Maryland	1883	35,571
	KAIZER, H Pediatric Tumors Johns Hopkins University Baltimore, Maryland	1884	71,518
	KLINTWORTH, G K Tissue Diagnosis Duke University Durham, North Carolina	1885	48,500
	NEWTON, W A, JR Children's Cancer Study Group A Children's Hospital Columbus, Ohio	1886	166,973
	OETTGEN, H F Cell-Mediated Immune Reactions to Human Cancer Antigens Memorial Hospital New York, New York	1887	29,847
	PRATT, C Treatment of Malignant Solid Tumors in Children St. Jude Children's Research Hospital Memphis, Tennessee	1888	75,608
	SUIT, H D Exploratory Studies in Cancer Research Massachusetts General Hospital Boston, Massachusetts	1889	189,101
	WILBUR, J R Pediatric Oncology Program Stanford University Stanford, California	1890	96,937
	WOLFF, J A Children's Cancer Study Group A Columbia University New York, New York	1891	59,152

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Heart, Lung, and Blood Institute	BUCHANAN, D C Developmental Outcome of Children Who Had Hyaline Membrane Disease as Infants Vanderbilt University Nashville, Tennessee	1892	57,000
	FELD, J N Inert Gas Exchange, Oxygen Influences—Organs and Tissues University of Pennsylvania Philadelphia, Pennsylvania	1893	8,761
	HELLER, P Patient Service Program University of Illinois Medical Center Chicago, Illinois	1894	87,994
	LECHENE, C P Biotechnology Resource in Electron Probe Microanalysis Harvard Medical Center Boston, Massachusetts	1895	5,000
	NICHOLS, C W Dose-Response Measures of Severe Oxygen Toxicity University of Pennsylvania Philadelphia, Pennsylvania	1896	8,761
	STAHLMAN, M T Evoked Electroencephalographic Potential in Infants with Hyaline Membrane Disease Vanderbilt University Nashville, Tennessee	1897	24,417
	WELLS, M A Lipids and Proteins in Coagulation and Myelination University of Arizona Medical Center Tucson, Arizona	1898	54,854
National Institute of Arthritis, Metabolism, and Digestive Diseases	CHOPRA, I J Thyroid Gland Physiology in Health and Disease University of California, Los Angeles Los Angeles, California	1899	43,898
	HARRIS, J W Erythrocyte Production and Destruction Case Western Reserve University Cleveland, Ohio	1900	97,536
	SOLOMON, D H Graves' Disease University of California, Los Angeles Los Angeles, California	1901	59,853
	SPICER, S S Pathologic Conditions Medical University of South Carolina Charleston, South Carolina	1902	6,699
	WILLIAMS, M A Characterization and Isolation of Lecithins University of California, Berkeley Berkeley, California	1903	63,723
National Institute of Allergy and Infectious Diseases	BIDLINGMAYER, W L Mosquito Flight Paths in Relation to the Environment Florida Medical Entomology Laboratory Vero Beach, Florida	1904	28,617

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Neurological and Communicative Disorders and Stroke	ALFORD, B R Animal Vestibular Laboratory Baylor College of Medicine Houston, Texas	1905	45,867
	ANISFELD, M Psycholinguistic Status of Sign Language Yeshiva University New York, New York	1906	35,942
	ARBIB, M A Information Processing in the Brain University of Massachusetts Amherst, Massachusetts	1907	88,862
	AUNON, J T Quantification of Single Evoked Responses Purdue University Lafayette, Indiana	1908	37,662
	BABITCH, J A Synaptic Membrane Structure and Function Texas Christian University Fort Worth, Texas	1909	36,372
	BAKER, R G Neuronal Organization of Precerebellar, Main Brain Stem Reticular Formation New York University New York, New York	1910	35,226
	BENTON, A L Performance Tests in Cerebral Disease University of Iowa Iowa City, Iowa	1911	45,014
	BRICKFORD, R G Automatic Pattern Recognition on Electroencephalogram University of California, San Diego La Jolla, California	1912	105,772
	BROOKHART, J M Neural Mechanisms of Postural Control University of Oregon Portland, Oregon	1913	55,767
	BUCHWALD, J S Response Plasticity During Increased Synaptic Use University of California, Los Angeles Los Angeles, California	1914	50,337
	BULLOCK, T H Comparative Neurophysiology University of California, San Diego La Jolla, California	1915	65,648
	CARPENTER, M B Vestibular System Pennsylvania State University Hershey Medical Center Hershey, Pennsylvania	1916	35,458
	CELESIA, G G Epileptogenic Activity and Sensory Input University of Wisconsin, Madison Madison, Wisconsin	1917	24,516
	CHAMBERS, W W Role of Central Feedback Mechanisms in Skilled Acts University of Pennsylvania Philadelphia, Pennsylvania	1918	97,502

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Neurological and Communicative Disorders and Stroke (Cont'd)	COLAVITA, F B Nonauditory Functions of Auditory Cortex University of Pittsburgh Pittsburgh, Pennsylvania	1919	31,544
	COLEMAN, P D Genetic and Post-Natal Effects on Brain Development University of Rochester Rochester, New York	1920	54,269
	CURTIS, R L Transfer of Neuromuscular Mutants to Standard Strains Medical College of Wisconsin Milwaukee, Wisconsin	1921	48,381
	DUFFY, F H Neurophysiology Children's Hospital Medical Center Boston, Massachusetts	1922	84,905
	EBNER, F F Anatomical Analyses of Cortical Systems Brown University Providence, Rhode Island	1923	36,828
	EDWARDS, S B Projections of Midbrain Reticular Formation University of Virginia Charlottesville, Virginia	1924	51,859
	ELAM, J S Axonal Glycoproteins and Glycosaminoglycans Florida State University Tallahassee, Florida	1925	40,681
	GABOR, A J Neuronal Interaction of Epileptogenic Focus University of California, Davis Davis, California	1926	40,110
	GACEK, R R Vestibular Nuclei and Their Connections University of Massachusetts Worcester, Massachusetts	1927	25,183
	GARBER, B B Neural Cell Recognition Factors in Brain Histogenesis University of Chicago Chicago, Illinois	1928	70,905
	GARCIA, J Behavioral and Neural Effects of Toxicosis and Pain University of California, Los Angeles Los Angeles, California	1929	58,443
	GEBHART, G F Neuropharmacology of Intracranially-Induced Analgesia University of Iowa Iowa City, Iowa	1930	13,625
	GERSHON, M D Neural Control of Gastrointestinal Activity Columbia University New York, New York	1931	54,442

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Neurological and Communicative Disorders and Stroke (Cont'd)	GERSTEIN, G L Interaction Between Neurons University of Pennsylvania Philadelphia, Pennsylvania	1932	54,936
	GOODGLASS, H New Measures of Aphasic Symptom Variables Clark University Worcester, Massachusetts	1933	58,663
	GOTTLIEB, D I Studies of Neuronal Recognition Washington University St. Louis, Missouri	1934	56,937
	GRINNELL, A D Formation and Function of Synapses University of California, Los Angeles Los Angeles, California	1935	49,078
	GWILLIAM, G F Neural Activity and Behavior Reed College Portland, Oregon	1936	21,194
	HALL, W C Structure and Function of Neocortex Duke University Durham, North Carolina	1937	44,564
	HENRY K R Disuse Supersensitivity of the Auditory System University of California, Davis Davis, California	1938	92,101
	HOLTZMAN, E Transport and Membrane Circulation in Nervous Tissue Columbia University New York, New York	1939	58,818
	HUNT, R K Development and Expression of Neuronal Locus Specificity Johns Hopkins University Baltimore, Maryland	1938	35,871
	IGARASHI, M Partial Ablation of Vestibular System and Equilibrium Baylor College of Medicine Houston, Texas	1941	46,857
	INGOGLIA, N A RNA Transport in Normal and Regenerating Nerves College of Medicine and Dentistry of New Jersey Newark, New Jersey	1942	22,781
	ISON, J R Facilitation and Inhibition of Reflex Behavior University of Rochester Rochester, New York	1943	45,667
	KAUFMAN, L Intersensory Perception of Relations in Time and Space New York University New York, New York	1944	37,996

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Neurological and Communicative Disorders and Stroke (Cont'd)	KEATING, E G Deficits and Recovery from Neocortical Disconnection State University of New York Upstate Medical Center Syracuse, New York	1945	65,264
	KLEINHOLZ, L H Neurosecretion and Endocrine Physiology Reed College Portland, Oregon	1946	57,603
	LANDMESSER, L T Developmental and Trophic Neural Interactions Yale University New Haven, Connecticut	1947	30,595
	LEDEEN, R W Nervous System Gangliosides and Related Lipids Yeshiva University Bronx, New York	1948	138,560
	MACAGNO, E R Invariance of Synaptic Pathways Columbia University New York, New York	1949	37,315
	MAKMAN, M H Biogenic Amines and Cyclic AMP Yeshiva University Bronx, New York	1950	69,000
	MASTERSON, R B Sensory Cortex Florida State University Tallahassee, Florida	1951	54,558
	McCANN, G D Insect Nervous System Studies California Institute of Technology Pasadena, California	1952	54,710
	McELIGOTT, J G Cerebellar Neuronal Activity and Motor Behavior Temple University Philadelphia, Pennsylvania	1953	29,751
	McINTOSH, T J Further Studies of Swollen Central Nerve Myelin Duke University Durham, North Carolina	1954	20,956
	MELLON, D, JR. Evolutionary Modification of a Motor Control System University of Virginia Charlottesville, Virginia	1955	28,066
	MICHAEL, J A Regional Cerebrovascular Response to Hypoxia Rush-Presbyterian-St. Luke's Medical Center Chicago, Illinois	1956	29,961
	MOUNTCASTLE, V B Recording and Test Apparatus for Neurophysical Experiments John Hopkins University Baltimore, Maryland	1957	45,010



Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Neurological and Communicative Disorders and Stroke (Cont'd)	MUGNAINI, E Developmental Morphology and Synaptogenesis University of Connecticut Storrs, Connecticut	1958	81,787
	NAUTA, W J Forebrain Organization and Anatomical Plasticity Massachusetts Institute of Technology Cambridge, Massachusetts	1959	79,779
	NORMAN, D A Computer-Implemented Studies of Sensory Processing University of California, San Diego La Jolla, California	1960	96,342
	PALAY, S L Fine Structure of the Nervous System Harvard University Boston, Massachusetts	1961	118,615
	PETERS, A Structure and Organization of the Cerebral Cortex Boston University Boston, Massachusetts	1962	73,078
	POMPEIANO, O Sensory Mechanism and Motor Control University of Pisa Italy	1963	15,000
	PROCTOR, L R Study of Vestibular Pathways in the Cerebellum University of Chicago Chicago, Illinois	1964	20,627
	PURPURA, D P Thalmo-cortical Afferents and Organization of Primary Projection Cortex Yeshiva University Bronx, New York	1965	36,612
	PYSH, J J Undernutrition and Synapse Development Northwestern University Chicago, Illinois	1966	64,692
	RALPH, C L Functions of the Pineal Complex. Colorado State University Fort Collins, Colorado	1967	69,064
	ROBERTS, E Nitrogen Metabolism of Nervous Tissue City of Hope National Medical Center Duarte, California	1968	90,015
	ROBINSON, J S Hemisphere Integration and Specialization University of California, San Francisco San Francisco, California	1969	26,788
	ROVAINEN, C M Organization of Primitive Spinal Cord Washington University St. Louis, Missouri	1970	38,634

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Neurological and Communicative Disorders and Stroke (Cont'd)	RUDEL, R G Neuropsychological Study of Chidren with Brain Damage Columbia University New York, New York	1971	74,275
	RUSHMER, D S Studies in Cerebellar Physiology Good Samaritan Hospital and Medical Center Portland, Oregon	1972	117,211
	SATZ, P Laterality of Sensory and Motor Functions University of Florida Gainesville, Florida	1973	64,567
	SOSO, M J Psychophysical Study of Pattern-Sensitive Epilepsy University of Washington Seattle, Washington	1974	16,485
	STRUMWASSER, F Mechanisms of Innate and Entrained Patterns of Neurons California Institute of Technology Pasadena, California	1975	101,043
	SUSSMAN, H M Dynamic Properties of Speech Sensorimotor Systems University of Texas Austin, Texas	1976	83,472
	TEITELBAUM, P Does Experience Help Later Hypothalamic Recovery? University of Illinois, Urbana Urbana, Illinois	1977	66,735
	TURNER, J E Regenerative Repair in the Central Nervous System Wake Forest University Winston-Salem, North Carolina	1978	32,781
	VERRILLO, R T Cutaneous Mechanoreceptor Systems Syracuse University Syracuse, New York	1979	49,961
	VERZEANO, M Activity in the Neuronal Networks of the Brain University of California, Irvine Irvine, California	1980	51,241
	WARD, P H Clinical Vestibular Research Center University of California, Los Angeles Los Angeles, California	1981	72,869
	WEGENER, J G Studies of Brain Function in Auditory Behavior Wright Institute of Otology Indianapolis, Indiana	1982	42,530
	WILLIAMSON, P D Cerebral Sensory Evoked Potentials Yale University New Haven, Connecticut	1983	32,923

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Neurological and Communicative Disorders and Stroke (Cont'd)	WILSON, V J Studies on Motor Control Rockefeller University New York, New York	1984	63,452
	WOOLSEY, C N Patterns of Localization in the CNS University of Wisconsin Madison, Wisconsin	1985	121,889
	WOOLSEY, C N Comparative Studies on Mammalian Nervous System University of Wisconsin Madison, Wisconsin	1986	11,959
	ZEMAN, W Diffuse Degenerative CNS Diseases Indiana University Indianapolis, Indiana	1987	60,342
	ZURIFF, E B Communication in Aphasia — Mechanisms and Rehabilitation Boston University Boston, Massachusetts	1988	59,705
National Institute of Child Health and Human Development	BARNET, A B Sensory Evoked EEG and Behavioral Responses in Children Children's Hospital National Medical Center Washington, District of Columbia	1989	69,760
	BRENT, R L Problems in Experimental Embryology Thomas Jefferson University Philadelphia, Pennsylvania	1990	150,936
	BRIZZEE, K R Prenatal Low-Dose Irradiation Effects on Primate Brain Tulane University Covington, Louisiana	1991	60,091
	BROOKS, P H The Interaction Between Text and Pictures George Peabody College Nashville, Tennessee	1992	13,217
	BROOKS, P H Developmental Aspects of Picture Comprehension George Peabody College Nashville, Tennessee	1993	13,217
	BROOKS, P H Register Encoding George Peabody College Nashville, Tennessee	1994	13,217
	BUTTERFIELD, E C Gifted, Normal and MR's Naming Latency as a Function of Adult Lexical Uncertainty University of Kansas Lawrence, Kansas	1995	17,896
	BUTTERFIELD, E C Lexical Codability as a Function of Age and IQ University of Kansas Lawrence, Kansas	1996	17,896

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Child Health and Human Development (Cont'd)	CARR, T Orienting Activities and Picture Memory George Peabody College Nashville, Tennessee	1997	13,217
	CARR, T Verbal Descriptions and Picture Memory George Peabody College Nashville, Tennessee	1998	13,217
	CARR, T Sentence Comprehension—Verifying Geometric Figures under Varying Memory Load George Peabody College Nashville, Tennessee	1999	13,217
	CHILDS, B Studies in Human Genetics Johns Hopkins University Baltimore, Maryland	2000	43,000
	COHEN, L B Habituation and Memory in the Human Infant University of Illinois, Urbana Urbana, Illinois	2001	50,496
	CONRAD, J T Neonatal Intensive Care—Infants Weighing Less Than 1000 gm University of Washington Seattle, Washington	2002	6,539
	COOPER, F S Speech Code and Language Processing Haskins Laboratories, Inc. New Haven, Connecticut	2003	70,085
	COOPER, F S Perception of Language by Ear and Eye Haskins Laboratories, Inc. New Haven, Connecticut	2004	70,085
	DALTON, A Memory in Down's Syndrome and Alzheimer's Disease Mental Retardation Center Toronto, Canada	2005	8,277
	DIXON, L S Evaluation of Performance on a Reversible S-V-O Structure Using Verb Chase University of Kansas Lawrence, Kansas	2006	56,000
	DIXON, L S General Component Analysis of S-V-O Structure University of Kansas Lawrence, Kansas	2007	17,896
	DIXON, L S Stimulus Control in Language Reception University of Kansas Lawrence, Kansas	2008	34,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Child Health and Human Development (Cont'd)	DUFFY, F H Neuronal and Neurophysiological Studies Children's Hospital Medical Center Boston, Massachusetts	2009	14,267
	DYKMAN, R Minimal Brain Dysfunction Children—Frontal and Temporal Lobe Types University of Arkansas Little Rock, Arkansas	2010	33,022
	ELLINGSON, R J Longitudinal Study of EEG's and EP's of Infants University of Nebraska Medical Center Omaha, Nebraska	2011	84,740
	FANTZ, R L Perception in Term, Preterm and Exceptional Infants Case Western Reserve University Cleveland, Ohio	2012	77,279
	FLAVELL, J H Learning and Memory University of Minnesota Minneapolis, Minnesota	2013	42,363
	FRANKENBURG, W Developmental Pediatrics University of Colorado Medical Center Denver, Colorado	2014	17,945
	FRAZIER, J Reading Programs University of North Carolina Chapel Hill, North Carolina	2014a	34,000
	FRIEDMAN, D Evoked Potential Studies of Information Processing in Language Experiments Yeshiva University Bronx, New York	2015	14,183
	FRIEDMAN, S Infant Behavior Laboratory George Peabody College Nashville, Tennessee	2016	15,306
	FRIEDMAN, S Intrinsic Motivation in Infancy—Perceptual Analysis George Peabody College Nashville, Tennessee	2017	84,574
	GALLAGHER, J J Development of Information Processing Skills in Children University of North Carolina Chapel Hill, North Carolina	2018	8,954
	GANZ, L Maturational and Experiential Factors in Development of Perception Stanford University Stanford, California	2019	55,780
	GESCHWIND, N Behavioral Studies in Primates Children's Hospital Medical Center Boston, Massachusetts	2020	3,699

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Child Health and Human Development (Cont'd)	HOCHBERG, J Visual Interest-Maintenance in Motion Pictures and Text Columbia University New York, New York	2021	47,752
	HOLDEN, E A Organizational Strategies in Unimodal and Intermodal Information Processing Columbia University New York, New York	2022	63,407
	JENKINS, J J Perception University of Minnesota Minneapolis, Minnesota	2023	42,363
	KAPLAN, J N Maternal Behavior and Infant Development Stanford Research Institute Menlo Park, California	2024	94,179
	KEMP, J C Treatment of Children with Communication Problems University of Washington Seattle, Washington	2025	6,539
	KESSEN, W Stimulus Sensitivity of Obese-Tending Infants Yale University New Haven, Connecticut	2026	22,721
	KIMBERLING, W J Linkage and Recombination in Man and their Relationship to Human Disease University of Colorado Denver, Colorado	2027	42,259
	KRUEGER, L E Higher Level Units in Perception Ohio State University Columbus, Ohio	2028	11,540
	LA BERGE, D Beginning and Fluent Reading University of Minnesota Minneapolis, Minnesota	2029	84,820
	LANDRUM, D Effects of Vibration on Human Comfort and Performance University of Dayton Dayton, Ohio	2030	88,988
	LOMBROSO, C T Sensory Evoked Responses and Cerebral Integrative Function Children's Hospital Medical Center Boston, Massachusetts	2031	3,699
	LUBERMAN, A M Reading as a Coalitional Skill Haskins Laboratories New Haven, Connecticut	2032	87,606
	LUKATELA, G L Cross-Language Studies of Processes Basic to Reading University of Belgrade Belgrade, Yugoslavia	2033	37,775



Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Child Health and Human Development (Cont'd)	MARCOM, A A Cellular and Molecular Controls in Neurodifferentiation University of Chicago Chicago, Illinois	2034	147,327
	McCALL, R B Perceptual-Cognitive Development in Human Infants Fels Research Institute Yellow Springs, Ohio	2035	35,122
	McCARRELL, N S Factors in Picture Comprehension George Peabody College Nashville, Tennessee	2036	13,217
	McCAULEY, C Semantic Relatedness Among Pictures George Peabody College Nashville, Tennessee	2037	13,217
	MORGANE, P J Laminar Analysis of Evoked Potentials Worcester Foundation for Experimental Biology Shrewsbury, Massachusetts	2038	26,191
	MULLEN, R Chimeras and Experimental Neurologic Disease Children's Hospital Medical Center Boston, Massachusetts	2039	3,699
	MYERS, N A Early Development of Representational Processes University of Massachusetts Amherst, Massachusetts	2040	51,492
	NUNNALLY, I C Meaning-Processing of Visual Displays Vanderbilt University Nashville, Tennessee	2041	49,211
	OBRIST, P Assessing Attentional Processes from Aspects of Biological Activity University of North Carolina Chapel Hill, North Carolina	2042	8,954
	OFFENBACH, S I Development of Color-Form Preference and Perception Purdue University Lafayette, Indiana	2043	28,227
	OTUAMA, L Pediatric Neurology—Clinical Research University of North Carolina Chapel Hill, North Carolina	2044	8,954
	PICK, A Perceptual Systems University of Minnesota Minneapolis, Minnesota	2045	16,077
	PICK, H L Cognitive Map University of Minnesota Minneapolis, Minnesota	2046	16,077

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Child Health and Human Development (Cont'd)	PICK, H L Development of Complex Perceptual Motor Systems University of Minnesota Minneapolis, Minnesota	2047	16,077
	PURPURA, D P Developmental Morphophysiology of Immature Brain Yeshiva University Bronx, New York	2048	14,183
	RAKIC, P Histogenesis in the Fetal Monkey CNS Children's Hospital Medical Center Boston, Massachusetts	2049	3,699
	ROBB, R M Eye Research Laboratories Support Children's Hospital Medical Center Boston, Massachusetts	2050	14,267
	ROSE, G H Behavioral Plasticity Bowdoin College Brunswick, Maine	2051	27,099
	ROSE, S A Overcoming the Adverse Effects of Prematurity Yeshiva University Bronx, New York	2052	59,699
	ROSS, L Relationship of Conditioning and Information Processing to Intellectual Deficit University of Wisconsin, Madison Madison, Wisconsin	2053	11,959
	RUDER, K F Imitation-Based and Comprehension-Based Procedures in Training of Lexical Items University of Kansas Lawrence, Kansas	2054	17,896
	RUDER, K F Language Delayed Children on a Figure Classification and Name Classification Task University of Kansas Lawrence, Kansas	2055	17,896
	RUFF, H A Early Development of Human Pattern Perception Briarcliff College Briarcliff Manor, New York	2056	33,247
	SCOTT, K G Organizational, Stimulus and Subject Factors in the Development of Memory University of Illinois, Urbana Urbana, Illinois	2057	34,000
	SHELBURNE, S A Pediatric Neurology Children's Hospital Cincinnati, Ohio	2058	22,836
	SHEPP, B E Developmental Studies in Learning and Attention Brown University Providence, Rhode Island	2059	56,976

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Child Health and Human Development (Cont'd)	SIDMAN, M Reading, Crossmodal Transfer and Stimulus Control Northeastern University Boston, Massachusetts	2060	35,486
	SIDMAN, M The Development of Elementary Reading and Language Skills Eunice Kennedy Shriver Center for Mental Retardation Boston, Massachusetts	2061	57,203
	SIEGEL, A W The Development of Spatial Representations University of Pittsburgh Pittsburgh, Pennsylvania	2062	43,176
	SIQUELAND, E R Experimental Determinants of Exploration in Prematures Brown University Providence, Rhode Island	2063	77,694
	SPRADLIN, J E Strategy Formation and Transfer University of Kansas Lawrence, Kansas	2064	17,896
	SPRADLIN, J E Relationship Between Classes of Non-Word Stimuli and Classes of Words University of Kansas Lawrence, Kansas	2065	17,896
	STERN, W C Seizure Susceptibility and Protein Malnutrition in Development Worcester Foundation for Experimental Biology Shrewsbury, Massachusetts	2066	69,842
	VANDENBERG, B J Developmental Examinations University of California, Berkeley Berkeley, California	2067	17,094
	VAUGHAN, H G Electrophysiologic Studies of Regional Cortical Maturation Yeshiva University Bronx, New York	2068	14,183
	VAUGHAN, H G Topographic Analyses of Event Related Brain Potentials Yeshiva University Bronx, New York	2069	14,183
	VELLUTINO, F Verbal Processing in Poor and Normal Readers State University of New York at Albany Albany, New York	2070	88,047
	VIETZE, P M Response Dependent and Response Independent Stimulation in Infants George Peabody College Nashville, Tennessee	2071	13,217

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding <sup>1</sup>
National Institute of Child Health and Human Development (Cont'd)	WANNEMACHER, J T Processing Strategies in Picture-Sentence Matching Bryn Mawr College Bryn Mawr, Pennsylvania	2072	17,629
	WILSON, D Placodes and Caudal Proliferation Center University of California, Davis Davis, California	2073	19,106
	WOLFF, P Sensory Evoked Responses and Cerebral Functions Children's Hospital Medical Center Boston, Massachusetts	2074	14,268
	ZAIDEL, E Laterality Effects on Raven's Colored Progressive Matrices California Institute of Technology Pasadena, California	2075	8,135
	ZUCKER, I Behavior, Hormones and Neural Biological Clocks University of California, Berkeley Berkeley, California	2076	64,709
National Institute of Dental Research	CONVERSE, J M Ocular Hypertelorism New York University New York, New York	2077	59,137
	KAYE, C Are Hemifacial Microsomia and Oculo-Auriculo-Vertebral Dysplasia the Same Syndrome? University of Illinois Chicago, Illinois	2078	41,000
National Institute of General Medical Sciences	BLESSER, B Perceptual Errors in Diagnostic Radiology Harvard University Boston, Massachusetts	2079	40,000
	BRIGGS, R W Gene Action in Oogenesis and Embryonic Development Indiana University Bloomington, Indiana	2080	20,000
	KNUDSON, A G Nature of Germinal and Somatic Mutations in Cancer University of Texas Health Science Center Houston, Texas	2081	65,933
	KUNDEL, H L Visual Search and Film Reader Error in Radiology Temple University Philadelphia, Pennsylvania	2082	69,072
	LINDSLEY, D B Brainstem-Hippocampal Systems Regulating Behavior University of California, Los Angeles Los Angeles, California	2083	36,905

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of General Medical Sciences (Cont'd)	MEINDL, J D Large Scale Integration for Non-Invasive Sensors Stanford University Stanford, California	2084	236,856
	MERRIAM, J R Genetic Change in Developing Cells of Drosophila University of California, Los Angeles Los Angeles, California	2085	32,802
	ORDAL, G W Phototactic and Chemotactic Behavior of Bacteria University of Illinois, Urbana Urbana, Illinois	2086	20,732
	POODRY, C A Genetic Control of Development University of California, Santa Cruz Santa Cruz, California	2087	45,583
	STREISINGER, G Genetic Studies with Zebra Fish University of Oregon Eugene, Oregon	2088	102,928
	STRYER, L Optical Studies of Protein Structure and Function Yale University New Haven, Connecticut	2089	58,933
	WOLFSON, S K, JR Bioautofuel Cell—Implantable Direct Energy Converter Montefiore Hospital and Medical Center New York, New York	2090	68,237
National Institute of Environmental Health Sciences	WOODIN, K The Structure of Membrane Receptors California Institute of Technology Pasadena, California	2091	90,000
	MCINTIRE, R W Behavioral Effects of Carbon Monoxide Exposure University of Maryland College Park, Maryland	2092	46,604
National Institute on Aging	DAVISON, P F Cross-Links in Collagen and Aging Boston Biomedical Research Institute Boston, Massachusetts	2093	58,056
	ELIAS, J W Age and Laterality Effects in Information Processing Texas Tech University Lubbock, Texas	2094	19,188
	ELIAS, M F Age Effects on Verbal and Non-Verbal Processes Syracuse University Syracuse, New York	2095	89,199

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute on Aging (Cont'd)	POLLACK, R H Sensory and Perceptual Processes in the Aged University of Georgia Athens, Georgia	2096	42,618
	SMITH, A D Interaction Between Human Aging and Memory Georgia Institute of Technology Atlanta, Georgia	2097	22,438
Division of Research Resources	DOHLMAN, C H General Research Support Massachusetts Eye and Ear Infirmary Boston, Massachusetts	2098	63,121
	GROVER, W D Visual Alertness Evoked by Maternal Care St. Christopher's Hospital for Children Philadelphia, Pennsylvania	2099	46,000
	KORNER, A F Visual Alertness in Neonates as Evoked by Maternal Care Stanford University Stanford, California	2100	14,558
	SERY, T W General Research Support Wills Eye Hospital Philadelphia, Pennsylvania	2100a	41,360
	TWITCHELL, T E Effects on Brain Function of Brain Damage Sustained by by Young Adults Massachusetts Institute of Technology Cambridge, Massachusetts	2101	16,267
National Library of Medicine	ARSHAM, G Development of Ophthalmology Training Course University of the Pacific San Francisco, California	2102	6,380
Total Projects for Program: 224		Total Known Funding:	10,641,673

## NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) RESEARCH CONTRACT FUNDING

National Institute of Arthritis, Metabolism, and Digestive Diseases	GINN, H E Neurobehavioral and Clinical Responses to Hemodialysis Vanderbilt University Nashville, Tennessee	2103	80,240
National Institute of Neurological and Communicative Disorders and Stroke	DAWSON, W W Electrode Materials Used in Neural Prosthesis University of Florida Gainesville, Florida	2104	100,900
National Institute of Child Health and Human Development	GOULD, J B Study of Monozygous and Dizygous Twins Boston University Boston, Massachusetts	2105	192,212
Total Projects for Program: 3		Total Known Funding:	373,352



Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
NATIONAL INSTITUTES OF HEALTH (EXCLUSIVE OF NEI) INTRAMURAL RESEARCH PROJECTS			
National Institute of Arthritis, Metabolism, and Digestive Diseases	KOHN, L D Cellular Activity Regulation by Pharmacodynamic Agents on Enzymes	2106	7
National Institute of Neurological and Communicative Disorders and Stroke	ALKON, D L Information Processing in Simple Nervous System	2107	160,000
	CAVENESS, W F X-Irradiation Alterations in Cerebral Cortex Structure and Function in Monkey	2108	7
	Caveness, W F Whole Brain Irradiation Within Therapeutic Range	2109	87,100
	CORLISS, E L R The Physical Senses	2110	7
	DEKABAN, A S Stroke in Human with Increased Plasma Lipids and in Familial Hyperlipoproteinemia	2111	3,000
	EBERSOLE, J S Neuronal Response of an Epileptic Focus in Feline Visual Cortex	2112	7
	EBERSOLE, J S Initial Abnormalities of Neuronal Response in a Developing Epileptogenic Focus	2113	7
	ENGEL, W K Myopathies	2114	20,000
	ENGEL, W K ALS and Other Lower Motor Neuron Disease	2115	9,000
	FEDIO, P Hemispheric Development and Specialization of Intellectual Functions	2116	34,000
	GAJDUSEK, D C Chronic CNS Disease Studies—Slow, Latent and Temperate Virus Infection	2117	100,000
	MARKS, W B Models of Neural Interactions	2118	3,000
	OMMAYA, A K Trauma of the Nervous System	2119	30,000
	QUARLES, R H Glycoprotein of Myelin in Development and Disease	2120	30,000
	WEBSTER, H F Morphological Studies of CNS Demyelination and Remyelination in Model System	2121	5,000
	WEBSTER, H F Myelin Membrane Structure	2122	3,000
	YELLIN, H Characteristics of Skeletal Muscle Sensorimotor Components	2123	5,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute on Aging	ARENBERG, D Perceptual Retention and Age	2124	7
	PLATO, C Twin Studies	2125	7
Division of Research Resources	GRIFFITH, J M Diagnostic Ultrasound	2126	77,000
Total Projects for Program: 21		Total Known Funding:	566,100

## DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE (EXCLUSIVE OF NIH) RESEARCH FUNDING

Food and Drug Administration	EISENSTARK, A Cell Damage by Near UV Light and Tryptophan Photoproducts University of Missouri Columbia, Missouri	2128	29,871
	ROSE, A L Hexachlorophene—Neuropathological and Biochemical Studies State University of New York Brooklyn, New York	2129	48,942
Health Services Administration	MIRANDA, S B Tests of Neonatal Visual-Perceptual Functioning to Predict Mental-Neurological Status Case Western Reserve University Cleveland, Ohio	2130	43,830
National Institute on Alcohol Abuse and Alcoholism	BUTTERS, N M Memory Impairment of Alcoholic Korsakoff Patients Boston University Boston, Massachusetts	2131	64,112
	LESTER, B K Influence of Alcohol and Aging on Biorhythms University of Oklahoma Oklahoma City, Oklahoma	2132	57,950
	LEVETT, J Alcohol Impairment of Neurological Systems Rush-Presbyterian-St. Luke's Medical Center Chicago, Illinois	2133	52,975
	MARTIN, J C Alcohol in Utero—Offspring Survival and Behavior University of Washington Seattle, Washington	2134	23,440
	MORTIMER, R G Effect of Alcohol on Safe Driving Skills University of Illinois, Urbana Urbana, Illinois	2135	52,103
	PARSONS, D A Neuropsychological Aspects of Alcoholism University of Oklahoma Oklahoma City, Oklahoma	2136	50,008
	JACQUET, Y F Morphine—CNS Sites of Analgesia and Addiction State Research Institute for Neurochemistry New York, New York	2137	39,503
National Institute on Drug Abuse	LESSE, H Effects of Cocaine on Brain Activity University of California, Los Angeles Los Angeles, California	2138	58,474

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute on Drug Abuse (Cont'd)	MEDZIHRADSKY, F Biological Transport and Biochemical Effects of CNS Drugs University of Michigan Ann Arbor, Michigan	2139	91,315
	MILLER, L L Cannabis — Human Memory, Timing, Perception, Aggression University of Kentucky Lexington, Kentucky	2140	50,303
	MOSKOVITZ, H Pharmacokinetics of Drug Effects on Driving Performance Southern California Research Institute Los Angeles, California	2141	401,838
	MOSKOWITZ, H A Driving Performance of Methadone Maintained Subjects Southern California Research Institute Los Angeles, California	2142	112,003
	RESNICK, R B Studies of Cocaine in Man New York Medical College New York, New York	2143	54,298
National Institute of Education	BOLZ, C R The Effects of the Strength and Number of Visual Mediators in the Learning Process University of Texas Austin, Texas	2144	7
	HABER, R N An Information Processing Analysis of Reading University of Rochester Rochester, New York	2145	81,461
	JONES, H R The Development of Visual and Verbal Memory State University of New York at Stony Brook Stony Brook, New York	2146	7
	LEFTON, L A A Developmental Examination of Basic Processes in Reading University of South Carolina Columbia, South Carolina	2147	20,333
	SIDMAN, M Reading Comprehension and Crossmodal Mediation of Stimulus Equivalences Northeastern University Boston, Massachusetts	2148	7
	THORSEN, E A Profile of Children's Reading Abilities as Indexed in Five Perceptual Processing Experiments Denison University Granville, Ohio	2149	7,080
	WEPMAN, J W Perceptual Development, Learning, and Learning Disabilities University of Chicago Chicago, Illinois	2150	7
	WICKLUND, D A Perception and Retention in Children's Reading University of Connecticut Storrs, Connecticut	2151	48,659

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Mental Health	AARONSON, D R Perceptual and Mnemonic Processing Abilities New York University New York, New York	2152	48,537
	APPEL, J B Drugs and Perception—An Experimental Analysis University of South Carolina Columbia, South Carolina	2153	21,098
	BANDURA, A Analysis of Vicarious Psychological Processes Stanford University Stanford, California	2154	51,063
	BERNSTEIN, A S Stimulus Significance and the Orienting Response State University of New York Downstate Medical Center Brooklyn, New York	2155	6,286
	BLOUGH, D S Comparative Psychophysics and Stimulus Control Brown University Providence, Rhode Island	2156	40,338
	BUCHSBAUM, M Laterality, Psychopathology and AER Intramural Project	2157	15,400
	CARLSON, V R Perceptual Adaptation Intramural Project	2158	17,500
	CARLSON, V R Individual Differences in Normal Perceptual Processes Intramural Project	2159	89,000
	CARON, A J The Effects of Early Visual Experience on Perceptual/ Cognitive Development in Infancy Intramural Project	2160	35,700
	CARON, A J Antecedent Risk Factors and Infant Perception/Cognition— Effects of Obstetric Medication Intramural Project	2161	35,400
	CARON, A J Assessing the Early Intellectual Capacities of Normal Infants Intramural Project	2162	45,000
	CHASE, W G Elementary Information Processing Carnegie-Mellon University Pittsburgh, Pennsylvania	2163	32,880
	CLEAVES, W T Crossmodal Attention and Habituation in Human Infants University of Minnesota Minneapolis, Minnesota	2164	15,600
	COFFIN, S C Temporal Aspects of Visual Information Processing University of California, Los Angeles Los Angeles, California	2165	13,400

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Mental Health (Cont'd)	COHEN, K M Mechanisms Underlying Development of Visual Scanning Harvard University Cambridge, Massachusetts	2166	6,900
	COYLE, J T Psychotropic Drugs and Developing Dopamine Neurons Johns Hopkins University Baltimore, Maryland	2167	39,960
	DIAMOND, I T Behavioral Analysis of Sensory Neocortex Duke University Durham, North Carolina	2168	131,585
	EASTON, R D The Mechanism Underlying a Visual Capture Effect Boston College Chestnut Hill, Massachusetts	2169	6,615
	ERIKSEN, C W Attention and Visual Information Processing University of Illinois, Urbana Urbana, Illinois	2170	36,579
	ESTES, K W Reward Values and Number Concepts in Children's Discrimination Learning Rockefeller University New York, New York	2171	?
	ESTES, W K Coding in Short Term Memory Rockefeller University New York, New York	2172	?
	EYMAN, R K Visually Limited-Retarded Study Pacific State Hospital Pomona, California	2173	4,790
	EYMAN, R K Assessment Problems in Determining Stimulus Thresholds for the Mentally Retarded Pacific State Hospital Pomona, California	2174	4,790
	EYMAN, R K Color Conformity and the Mentally Retarded—Social Pressure Pacific State Hospital Pomona, California	2175	4,790
	FRIEDMAN, S L The Salience of Shape in Infant Perception Intramural Project	2177	10,683
	GARNER, W R Perception of Structure Yale University New Haven, Connecticut	2178	47,785
	GERSHON, E S Hypothesis of X-Linkage in Bipolar and Unipolar Affective Disorders Intramural Project	2179	5,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Institute of Mental Health (Cont'd)	GERSHON, E S Genetic-Biologic Studies of Psychiatric Disorders Intramural Project	2180	20,000
	GEWIRTZ, J L Directions of Influence in Mother-Infant Interactions Intramural Project	2181	7,000
	GOTT, P Evoked Potentials of Hemispheric Specialization in Commissurotomy California Institute of Technology Pasadena, California	2182	54,000
	GRANT, D A Verbal Control of Behavior in Classical Conditioning University of Wisconsin Madison, Wisconsin	2183	36,460
	GREENO, J G Spatial Reasoning in Problem Solving University of Pittsburgh Pittsburgh, Pennsylvania	2184	47,181
	GREENWALD, A G Mechanisms of Voluntary Action and Voluntary Attention Ohio State University Columbus, Ohio	2185	31,295
	GRICE, G R Conditioning and Response Organization University of New Mexico Albuquerque, New Mexico	2186	31,835
	GROSS, C G Functions of Temporal Cortex in Discrimination Princeton University Princeton, New Jersey	2187	28,000
	HAMILTON, C R Learning and Memory in Split-Brain Monkeys California Institute of Technology Pasadena, California	2188	39,495
	HAMILTON, C R Cerebral Dominance in Monkeys California Institute of Technology Pasadena, California	2189	8,135
	HERMAN, J H Learned Behavior and the Psychophysiology of Sleep Montefiore Hospital and Medical Center New York, New York	2190	63,091
	HERRNSTEIN, R H The Matching Law Harvard University Cambridge, Massachusetts	2191	74,540
	HOFFMAN, H S Psychophysics of the Startle Reflex Bryn Mawr College Bryn Mawr, Pennsylvania	2192	23,281



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National Institute of Mental Health (Cont'd)	HOMA, D L Prototype Abstraction and Conceptual Structure Arizona State University Tempe, Arizona	2193	28,506
	ISENBERG, D S Word-Picture Matching Within and Between Hemispheres California Institute of Technology Pasadena, California	2194	54,000
	JACOBOWITZ, D M Immunofluorescence Study of the Uptake of the Antibody to Dopamine-Beta-Hydroxylase (ADBH) Intramural Project	2195	18,300
	JARVIK, M E Behavioral Effects of Drugs in Macaca Mulatta University of California, Los Angeles Los Angeles, California	2196	87,046
	JARVIS, C D Single Unit Analysis of Inferior Temporal Cortex in Behaving Monkeys Intramural Project	2197	111,600
	JOHN, E R Neural Mechanisms of Memory Readout New York Medical College New York, New York	2198	46,415
	KIES, M W Immunologic Reactivity of Myelin Basic Protein Intramural Project	2199	10,000
	KSIR, C J Rate-Dependent and Stimulus Control Effects of Drugs University of Wyoming Laramie, Wyoming	2200	16,309
	LABERGE, D Perceptual Information Processing University of Minnesota Minneapolis, Minnesota	2201	30,327
	MANDLER, G Research in Human Information Processing Univeristy of California, San Diego La Jolla, California	2202	101,992
	McARTHUR, L The Role of Attention in Person Perception Brandeis University Waltham, Massachusetts	2203	27,745
	MEYER, D R Postoperative Recovery Mechanisms and Retention Ohio State University Columbus, Ohio	2204	35,354
	MIRSKY, A F Studies in the Neuropsychology of Attention Boston University Boston, Massachusetts	2205	31,860
	MOOK, D G Attentional and Search Behavior University of Virginia Charlottesville, Virginia	2206	7,678

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National Institute of Mental Health (Cont'd)	MORRELL, F Information Storage in Nerve Cells Rush-Presbyterian-St. Luke's Medical Center Chicago, Illinois	2207	55,878
	NELSON, T O Savings and Forgetting From Long-Term Memory University of Washington Seattle, Washington	2208	20,076
	ORNITZ, E M Brain Stem Responses in Autistic Children University of California, Los Angeles Los Angeles, California	2209	55,686
	PEGAM, G V Sleep and Protein Synthesis University of Alabama Birmingham, Alabama	2210	29,506
	PETTIGREW, J Visual Cortical Neurons California Institute of Technology Pasadena, California	2211	43,322
	PFAMMAN, C Perceptual Basis of Reading Rockefeller University New York, New York	2212	54,000
	PIPP, S L Interactions of Infant Depth and Form Perception University of Denver Denver, Colorado	2213	6,900
	PITTENDRIGH, C S Circadian Rhythms and the Central Nervous System Stanford University Stanford, California	2214	48,054
	POTTER, M C Understanding Pictures and Words Massachusetts Institute of Technology Cambridge, Massachusetts	2215	30,747
	PRIBRAM, K H Radioactive Amino Acid Tracers in Association Cortex Stanford University Stanford, California	2216	7,397
	PRIBRAM, K H Color or Pattern Discrimination from Multi-Dimensional Cues Stanford University Stanford, California	2217	7,397
	PRIBRAM, K H Receptive Field Properties of Cortex, Putamen and Caudate Stanford University Stanford, California	2218	7,393
	PRIBRAM, K H Color or Pattern Discrimination from Multi-Dimensional Cues Stanford University Stanford, California	2219	7,393

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National Institute of Mental Health (Cont'd)	PRIMBRAM, K H Microelectrode Studies Over Intrinsic Association Cortex Stanford University Stanford, California	2220	54,000
	PRIBRAM, K H Brain Function Temporal Lobe Stanford University Stanford, California	2221	7,397
	RAPOPORT, S I Transport Mechanisms across Membranes and the Blood- Brain Barrier Intramural Project	2222	50,000
	RECHTSCHAFFEN, A Relationship of Phasic Periorbital Integrated Potentials to Personality University of Chicago Chicago, Illinois	2223	16,562
	REICH, T Genetics of Manic Depressive Illness—Bipolar Type Washington University St. Louis, Missouri	2224	51,847
	REITE, M Physiology of Agitation Depression Reaction University of Colorado Denver, Colorado	2225	87,347
	REYNOLDS, T D Eye Tracking in Schizophrenic Patients Intramural Project	2226	14,900
	RILEY, D Information Acquisition and Short-Term Memory University of California, Berkeley Berkeley, California	2227	41,706
	ROFFWARG, H P Physiology and Psychophysiology of Sleep and Dreaming Montefiore Hospital and Medical Center New York, New York	2228	29,834
	SCHOOLER, C Social, Psychological, and Biological Interactions in Schizophrenics Intramural Project	2229	4,000
	SHAGASS, C Electrophysiological Studies of Psychiatric Disorders Temple University Philadelphia, Pennsylvania	2230	129,474
	SHAW, M L Optimal Allocation of Cognitive Resources Rutgers University New Brunswick, New Jersey	2231	6,497
	SHIFFRIN, R M Information Processing and Retrieval Indiana University Bloomington, Indiana	2232	41,666

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National Institute of Mental Health (Cont'd)	SIMON, H A Research on Information Processing Psychology Carnegie-Mellon University Pittsburgh, Pennsylvania	2233	235,563
	SIRIS, S Cortical Laterality and Psychological Functioning Intramural Project	2234	7
	SMITH, E E Representations and Processes in Semantic Memory Stanford University Stanford, California	2235	44,368
	SMITH, J R Quantitative Analysis of Sleep EEG's and EOG's University of Florida Gainesville, Florida	2236	60,433
	STELLAR, E Neurological Mechanisms Underlying Behavior University of Pennsylvania Philadelphia, Pennsylvania	2237	752,368
	STERN, J M Psychobiology of Maternal Behavior Rutgers University New Brunswick, New Jersey	2238	29,514
	TEUBER, H Behavioral Effects of Brain Injury Massachusetts Institute of Technology Cambridge, Massachusetts	2239	58,886
	TIEMAN, S B Transfer of Discriminations of Movement across the Midbrain Commissures California Institute of Technology Pasadena, California	2240	8,135
	VAUGHAN, H G Electrophysiologic Studies of Psychomotor Processes Yeshiva University Bronx, New York	2241	108,814
	VOGEL, J M Cognitive Masking—A Constraint on Children's Visual Memory Rutgers University New Brunswick, New Jersey	2242	7,973
	WALLACH, H Factors in the Constancy of Visual Direction Swarthmore College Swarthmore, Pennsylvania	2243	46,014
	WEISSMAN, M M Genetic Studies of Depressive Disorders Yale University New Haven, Connecticut	2244	132,146
	WILSON, W A Analysis of Behavioral Functions of Cerebral Areas University of Connecticut Storrs, Connecticut	2245	32,212

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National Institute of Mental Health (Cont'd)	WYATT, R J Studies of Drugs of Abuse Intramural Project	2246	31,500
	ZAHN, T P Psychophysiological Concomitants of Minimal Brain Dysfunction in Children Intramural Project	2247	5,300
	ZAIDEL, E Psycholinguistic Ability Following Commissurotomy and Hemispherectomy California Institute of Technology Pasadena, California	2248	8,134
	ZUBIN, J Vulnerability to Schizophrenic Episodes in Adults New York State Psychiatric Institute New York, New York	2249	26,476
Social and Rehabilitation Service	DILLER, L Remediation of Untreated Impairments New York University New York, New York	2250	62,605
	GARBER, H Differential Appreciation of Color and Form by Young Children University of Wisconsin Madison, Wisconsin	2251	1,213
	HERMAN, R M Relationship Between Spasticity and Postural Control— The Effect of Drugs and Orthotic Appliances Temple University Philadelphia, Pennsylvania	2252	64,740
	KRAUFT, C C Rehabilitation Service Delivery to Title XVI Clients in a Service for the Blind Agency University of Arkansas Fayetteville, Arkansas	2252a	2,406
	SCHEIN, J D Survey of Pre-Vocational Needs of Deaf-Blind Youth New York University New York, New York	2252b	4,700
	STEWART, A Development of Standards and Principles for Visual Displays for Deaf Persons—The Visual Communication Laboratory New York University New York, New York	2253	32,200
	STEWART, A The Development and Application of New Testing Procedures to the Study of Captions and Sign Language on Television New York University New York, New York	2254	49,342

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Social and Rehabilitation Service (Cont'd)	TICHAUER, E R Pharmaco-Kinesiology New York University New York, New York	2255	26,834
	TICHAUER, E R Correlative Kinesiology New York University New York, New York	2256	104,185
	TO BE DESIGNATED BY THE INSTITUTION Social Rehabilitation Program for Geriatric Blind New York Infirmary New York, New York	2256a	110,000
Total Projects for Program: 131		Total Known Funding: 6,181,622	

## OTHER FEDERAL RESEARCH FUNDING

Department of Agriculture	BAGLEY, M O Perception of Colored Afterimages in Education of Designers University of Minnesota St. Paul, Minnesota	2257	7
	BRYNER, J H Maternal and Fetal Responses to Infections of the Bovine Genital Tract Iowa State University Ames, Iowa	2258	53,653
	COLEMAN, T H Utilizing Avian Species Other Than Poultry as Pilot Research Animals Michigan State University East Lansing, Michigan	2259	7
	GYLES, N R Expression of Qualitative Genes of Poultry in Internal and External Environment University of Arkansas Fayetteville, Arkansas	2260	7
	HARRISON, P C Role of Pineal in Photoperiodic Responses Washington State University Pullman, Washington	2261	7
	LAZAR, I Community Service Implications of Public Law PL 92-603 Cornell University Ithaca, New York	2262	7
	LOHER, W J External and Internal Factors Regulating Reproduction in Orthoptera University of California, Berkeley Berkeley, California	2263	7
	McCONKIE, G W Processes in Skilled Reading Cornell University Ithaca, New York	2264	114,159
	PIPA, R L Investigation on the Structure, Development, and Histochemistry of the Insect Nervous System University of California, Berkeley Berkeley, California	2265	19,639
	SCHWAB, L O Rehabilitation of Handicapped Women University of Nebraska Lincoln, Nebraska	2265a	18,139



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Department of Agriculture (Cont'd)	SENN, T L Therapeutic, Physical, Psychological and Rehabilitated Response to Certain Aspects of Horticuture Clemson University Clemson, South Carolina	2266	22,638
	SHIRLEY, H V Photoperiodism and Physiological Functions of Chickens University of Tennessee Knoxville, Tennessee	2267	?
	WILSON, W O Extraocular Photoreception in Avian Species University of California, Davis Davis, California	2268	33,916
Department of Commerce	BOOKER, R Luminance Brightness Comparison Intramural Project	2269	50,000
Department of Defense Air Force	DEVINE, J V Assessment of Functional Vision University of Texas Houston, Texas	2270	191,429
	DRYDEN, R S Prospective Study of Selected Medical Conditions in Flying Personnel (Clinical Study Groups) U.S. Air Force School of Aerospace Medicine Brooks Air Force Base San Antonio, Texas	2271	402,000
	HOLT, W T Evaluation of Non-Invasive Physiologic Techniques Technology, Inc. San Antonio, Texas	2272	20,578
	KISLIN, B Visual Factors in Aerospace Flight U.S. Air Force School of Aerospace Medicine Brooks Air Force Base San Antonio, Texas	2273	95,000
	LAURITSEN, T N Aircrew Vulnerability to Laser and Nuclear Effects Air Force Weapons Lab Kirtland Air Force Base Kirtland, New Mexico	2274	75,000
	PANTLE, A Research on the Recognition and Analysis of Complex and Dynamic Imagery Miami University Oxford, Ohio	2275	57,000
	PARKINSON, S R Visual and Auditory Information Processing Arizona State University Tempe, Arizona	2276	15,693
Army	HART, E R Mammalian Toxicological Evaluation of DIMP and DCPM (Phase I) Litton Bionetics Inc. Kensington, Maryland	2277	208,000
	NOT REPORTED Committee on Vision and Committee on Hearing, Bioacoustics and Biomechanics National Academy of Sciences Washington, District of Columbia	2278	28,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Department of Defense (Cont'd) Navy	COWAN, M J Behavioral Toxicology of Naval Chemical Environmental Contaminants in Chronic Exposure Situations Naval Medical Research Institute Bethesda, Maryland	2279	55,000
	EISENBUD, M Investigation of Biomolecular Functions by Microwave Radiation New York University New York, New York	2280	40,000
	GUEDRY, F E Performance Limits Imposed by Vestibular Responses in Moving Military Systems Naval Aerospace Medical Research Laboratory Pensacola, Florida	2281	?
	HIXSON, W C Oculovestibular Effects on Visual Performance in Moving Military Systems: Stabilized Optical Viewing Devices Naval Aerospace Medical Research Laboratory Pensacola, Florida	2282	10,000
	KINNEY, J A S A Visual Test of Fatigue and Physiological Disturbances in Navy Divers and Submariners Naval Submarine Medical Center, Medical Research Laboratory Groton, Connecticut	2283	52,000
	PHILLIPS, R D Navy Environment: Evaluation of the Safety Exposure Limits of Radar Used by Navy Personnel Battelle Memorial Institute Columbus, Ohio	2284	100,000
	POLLACK, I Surveillance: Memory and Perception in the Interpretation of Visual Displays University of Michigan Ann Arbor, Michigan	2285	26,857
	RAY, C Marine Mammal Acoustic and Behavioral Capabilities Johns Hopkins University Baltimore, Maryland	2286	50,000
	RIDGEWAY, S H Living Sensor and Neural Processing Technology U.S. Navy Undersea Center San Diego, California	2287	?
	SCHUSTERMAN, R J Marine Mammal Visual/Acoustic Behavioral Capabilities California State University Hayward, California	2288	35,438
Energy Research and Development Administration	LATIES, V G Behavioral Pharmacology and Toxicology University of Rochester Rochester, New York	2289	82,700
National Aeronautics and Space Administration	KLEIN, H P Simulation Technology for Aeronautics Ames Research Center Moffett Field, California	2290	?
	TOBIAS, C A Particle-Induced Visual Sensations Lawrence Berkeley Laboratory Berkeley, California	2291	200,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Science Foundation	BERN, H A Properties of Neurosecretory Cells and Systems University of California, Berkeley Berkeley, California	2292	73,600
	BOGARAD, L Photoregulatory Mechanisms in Biliprotein Metabolism Harvard University Cambridge, Massachusetts	2293	52,600
	BULLOCK, T H Neuronal Integrative Mechanisms University of California, San Diego La Jolla, California	2294	76,900
	BURGHARDT, G M Early Experience and Sensory Processes University of Tennessee Knoxville, Tennessee	2295	27,600
	CUNNINGHAM, T J Patterns of Neuronal Development After CNS Injury Medical College of Pennsylvania Philadelphia, Pennsylvania	2296	17,500
	DIEHN, B Biochemistry and Biophysics of Phototaxis University of Toledo Toledo, Ohio	2297	25,050
	ESKIN, A Neural Basis of Entrainment of Circadian Rhythms Rice University Houston, Texas	2298	27,200
	GALLER, J R Effects of Intergenerational Malnutrition on Behavior Boston University Boston, Massachusetts	2299	31,650
	GOODENOUGH, D A Differentiated Membrane Assembly and Interactions Harvard University Cambridge, Massachusetts	2300	41,400
	GRIFFIN, D R Biological Basis of Orientation Behavior Rockefeller University New York, New York	2301	36,000
	HARTING, J K Connections of the Pulvinar Nucleus in the Rhesus Monkey University of Wisconsin Madison, Wisconsin	2302	23,050
	HUNT, R K Development of Nerve Cell Specificity Johns Hopkins University Baltimore, Maryland	2303	28,500
	KAMPA, E M Photoenvironment and the Behavior and Vision of Mesopelagic Animals University of California, San Diego La Jolla, California	2304	45,000

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
National Science Foundation (Cont'd)	KLEINHOLZ, L H Physiological Specificity of Neurosecretory Hormones from the Crustacean Eyestalk Reed College Portland, Oregon	2305	30,000
	LEVY, J Etiology, Manifestations, and Consequences of Laterality University of Pennsylvania Philadelphia, Pennsylvania	2306	70,700
	MAYZNER, M S Visual Information Processing with Sequential Inputs Loyola University Chicago, Illinois	2307	26,950
	PICKFORD, G E Physiology of the Euryhaline Fundulus Heteroclitus Hiram College Hiram, Ohio	2308	9,450
	SABRA, A I The Development of Optics as a Science Harvard University Cambridge, Massachusetts	2309	23,350
	SANDERSON, A C Non-Stationary Analysis of Neuronal Spike Trains Carnegie Mellon University Pittsburgh, Illinois	2310	38,750
	SMITH, D G Communication and Ecology State University of New York at Stony Brook Stony Brook, New York	2311	12,600
	TAYLOR, D H Amphibian Orientation Miami University Oxford, Ohio	2312	12,550
	UNDERWOOD, H A Circadian Physiology and Photoreception University of North Carolina Raleigh, North Carolina	2313	20,250
	WINFREE, A T Dynamics of Biological Clocks Purdue University Lafayette, Indiana	2314	37,500
	WOOLACOTT, R M Induction and Mode of Action of a Light-Triggered Microfilament System Harvard University Cambridge, Massachusetts	2315	31,450
Veterans Administration	ALTERMAN, A I The Effect of Ethanol on the Pupillary Reactivity of Alcoholics Veterans Administration Hospital Coatesville, Pennsylvania	2316	11,200
	BERGER, P A Eye Tracking Correlates of Psychiatric Diagnosis and Treatment Veterans Administration Hospital Palo Alto, California	2317	11,200

Supporting Organization	Principal Investigator Project Title Institution City and State	Entry Number	FY 1976 Funding
Veterans Administration (Cont'd)	FRUEH, F X Diagnostic Aspects of Averaged Electroencephalographic Sensory Responses Veterans Administration Hospital Tampa, Florida	2318	11,200
	GOFF, W R EEG and Visual Evoked Potentials Recording from Depth Electrodes in Epileptics Veterans Administration Hospital West Haven, Connecticut	2319	11,200
	HARRIS, L A A Preliminary Program Evaluation of the Blind Rehabilitation Unit Veterans Administration Hospital Tacoma, Washington	2320	11,200
	KEATING, E G Deficits and Recovery Following Neocortical Disconnection Veterans Administration Hospital Syracuse, New York	2321	11,200
Total Projects for Program: 66		Total Known Funding:	2,943,639

#### NATIONAL PHILANTHROPIC AND VOLUNTARY AGENCY RESEARCH FUNDING

American Cancer Society	GREGG, E C Detection and Delineation of Soft Tissue Tumors Case Western Reserve University Cleveland, Ohio	2322	72,344
John A Hartford Foundation, Inc.	TROUTMAN, R C Development and Application of Stereotactic Microsurgery Manhattan Eye and Ear Hospital Manhattan, New York	2324	18,347
E. Matilda Ziegler Foundation for the Blind, Inc.	WAINWRIGHT, B T The Amelioration of the Condition of the Blind Project Orbis, Inc. New York, New York	2325	5,000
National Eye Research Foundation	VOGT, J New Low-Cost Eye Screening Program Intramural Project	2326	500
National Retinitis Pigmentosa Foundation, Inc.	FONDA, G E Optical Aids in Low Vision St. Barnabas Medical Center Livingston, New Jersey	2327	1,500
Spencer Foundation	TEUBER, H-L Basic Mechanisms of Learning Massachusetts Institute of Technology Cambridge, Massachusetts	2333	79,162
	WALLSTEN, T S Reading Rates and Comprehension Score in Visual and Tactile Modalities University of North Carolina Chapel Hill, North Carolina	2334	4,000
Total Projects for Program: 8		Total Known Funding:	188,353





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Basic Mechanisms	102, 307, 313, 314, 526, 1141, 1544, 2267, 2293	5, 31, 33, 166, 393, 526, 578, 579, 693, 1553, 1571, 1732, 1769, 1781, 1782, 1812, 1816, 1818, 1819, 1820, 1821, 1825, 1828, 1895, 1975	321, 323, 328, 329, 331, 332, 335, 337, 338, 339, 341, 345, 346, 352, 354, 355, 364, 365, 372, 374, 376, 377, 380, 390, 391, 392, 403, 405, 406, 409, 409a, 412, 415, 417, 424, 430, 472, 514, 1206, 1233, 1247, 1846, 1851	146, 349, 420, 423, 424, 427, 430, 435, 437, 439, 440, 442, 443, 444, 447, 449, 450, 451, 452, 456, 457, 460, 461, 463, 465, 466, 468, 469, 471, 472, 473, 474, 475, 477, 479, 484, 487, 491, 578, 579, 732, 1228, 1266, 1366, 1759, 1869, 1875	12, 13, 39, 107, 212, 349, 469, 511, 1086
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Etiology	4, 26, 102, 307, 313, 314, 526, 985, 1056, 1082, 2106, 2267	5, 19, 188, 218, 334, 411, 526, 1211, 1340, 1397, 1784, 1822, 1834	319, 320, 323, 327, 329, 334, 337, 338, 339, 347, 351, 364, 365, 370, 372, 373, 380, 390, 392, 398, 403, 405, 406, 408, 409, 409a, 410, 411, 412, 414, 415, 472, 514, 1204, 1205, 1206, 1211, 1853, 1856	420, 421, 422, 423, 426, 429, 434, 435, 439, 442, 444, 449, 450, 453, 454, 455, 457, 462, 464, 466, 468, 472, 477, 478, 485, 488, 491, 732, 1366, 2259	12, 13, 212, 511
Pathogenesis	4, 307	334	322, 327, 332, 334, 337, 342, 370, 373, 380, 389, 390, 409a, 1205, 1206	349, 421, 422, 426, 434, 435, 439, 442, 444, 445, 453, 455, 456, 461, 462, 463, 464, 466, 471, 473, 477, 482, 485, 490, 1266	12, 13, 349, 1090
Diagnostic Methods	1082	121, 166, 205, 334, 1868, 2084	334, 372	427, 481, 1868	
Eye Involvement	307,	188, 218, 324, 393, 1329, 1880	345, 363, 409, 412	390	511, 555
Treatment and Prophylaxis (Experimental)		177, 188, 324, 334, 395, 527	322, 327, 330, 334, 342, 347, 364, 370, 372, 373, 376, 378, 405, 408, 409a, 410, 1204, 1205, 1214, 1223, 1846, 1856	390, 421	12, 13, 1086
Treatment and Prophylaxis (Clinical)		393, 492, 1211	368, 405, 1211, 1221, 1228, 1229	349	349, 492
Patient Care, Rehabilitation		1397, 2315			
Equipment, Methods	26, 1544	121, 166, 188, 205, 218, 578, 579, 1340, 1553, 1571, 1782, 1825, 2084, 2090	339, 346, 368, 374, 378, 406, 409a, 1195, 1223	60, 484, 488, 578, 579	

Aqueous Studies	Uveal Tract and Inflammatory States	Retina	Optic Nerve and Lateral Geniculate Nucleus	Visual Cortex and Other Higher Centers	Oculomotor Systems
498, 500, 503, 509, 510, 516, 526, 538, 543, 544, 549, 562, 1285	164, 197, 430, 438, 469, 500, 502, 526, 538, 1001, 1213, 1218, 1237, 1366, 1844, 2211	See II Appendix	35, 75, 509, 611, 618, 622, 640, 669, 705, 732, 1444, 1446, 1537, 1538, 1659, 1954	40, 56, 75, 544, 572, 573, 574, 583, 589, 594, 609, 614, 618, 622, 624, 648, 653, 656, 681, 688, 722, 727, 732, 738, 1327, 1453, 1462, 1471, 1537, 1538, 1574, 1577, 1659, 2216	571, 573, 574, 592, 722, 2314
513	1056	517			
180, 495, 498, 503, 504, 509, 522, 524, 525, 526, 531, 533, 534, 538, 544, 549, 550, 567, 1285, 1286, 1290	18, 164, 169, 181, 243, 459, 502, 523, 526, 534, 538, 1056, 1146, 1082, 1114, 1146, 1286, 1366, 2211	See III Appendix A	495, 509, 604, 606, 611, 618, 632, 636, 643, 659, 668, 677, 683, 686, 705, 732, 746, 1312, 1328, 1416, 1446, 1450, 1482, 1537, 1538, 1542, 1550, 1557, 1579, 1615, 1623, 1938	150, 525, 544, 572, 573, 574, 576, 592, 594, 606, 609, 614, 618, 632, 636, 643, 648, 653, 655, 659, 677, 681, 688, 696, 717, 722, 727, 732, 742, 1041, 1327, 1340, 1416, 1431, 1449, 1450, 1452, 1453, 1458, 1462, 1471, 1482, 1537, 1538, 1542, 1482, 1500, 1537, 1538, 1542, 1574, 1628, 1938, 1952, 1969, 2216, 2302	234, 573, 574, 576, 592, 620, 623, 643, 659, 677, 701, 722, 742, 1416, 1450, 1542, 1628, 1822, 2314
180, 495, 496, 498, 503, 504, 509, 513, 522, 529, 535, 1289	169, 181, 197, 243, 343, 459, 508, 535	3, 24, 49, 81, 95, 124, 137, 148, 159, 168, 170, 180, 194, 195, 197, 207, 216, 217, 243, 509, 517, 729, 1021, 1083, 1115, 1121, 1135, 1147, 1615, 1625, 1626	495, 509, 1615, 1954		
522, 534, 545	169, 343, 534, 1082, 1218	3, 29, 40, 51, 121, 127, 162, 166, 169, 172, 206, 228, 517, 724, 1076		40, 496, 1462, 1626, 2168, 2216	233
180, 498, 509, 543, 564, 1289	459, 502	20, 180, 509, 609, 669	509, 618, 669	609, 618, 1546, 1551	555, 623, 625
496, 499, 504, 505, 513, 522, 524, 527, 528, 529, 535, 536, 543, 544, 557, 564, 567, 1124, 1278, 1285, 1286, 1290	197, 535, 1237, 1286	21, 57, 197, 1031, 1086, 1089, 1121, 1134, 1147, 1286		496, 544, 1546	
536, 557					
		1136			
549, 552, 560	169, 560	26, 28, 40, 47, 55, 56, 60, 83, 88, 89, 115, 120, 121, 127, 128, 129, 142, 155, 156, 162, 166, 169, 185, 221, 222, 287, 309, 578, 579, 655, 990, 1003, 1034, 1069, 1072, 1094, 1142, 1544, 1573, 1811	611, 636	40, 56, 636, 655, 738, 1340, 1952, 1964	1964



Subject Approach				
	General	Input/Output	The Visual Stimulus	Oculomotor Performance
Equipment and Methods	1405, 1427, 1505, 1508, 1520, 1521, 1525, 1527, 1529, 2079, 2135, 2141, 2142, 2190, 2271, 2282, 2290	591, 660, 698, 1342, 2172, 2202	660, 698, 720, 1320, 1520, 1522, 1526, 2269, 2282	603, 660, 720, 1309, 1320, 1404, 1406, 1437, 1501, 1505, 1511, 1513, 1521, 1583, 2135, 2141, 2190, 2192
Behavioral Tests	725, 1363, 1403, 1520, 1554, 1974, 1995, 2062, 2094, 2227, 2283	64, 106, 211, 577, 597, 616, 623, 641, 647, 667, 676, 690, 698, 709, 1414, 1561, 1567, 2094, 2202, 2227	647, 672, 698, 723, 730, 1363, 1421, 1498, 1515, 1520, 1974, 2178	6, 616, 679, 1403, 1437, 2192
Neurological Correlates	715, 1330, 1334, 1354, 1398, 1427, 1597, 1608, 1945, 1971, 1983, 2005, 2019, 2031, 2209, 2237, 2241, 2282	106, 569, 577, 623, 641, 660, 664, 690, 709, 714, 715, 1334, 1354, 1461, 1584, 1605, 1661, 2170, 2172, 2209	660, 720, 730, 1461, 2219, 2282	586, 596, 623, 652, 660, 661, 682, 716, 720, 741, 742, 1331, 1424, 1611, 1943, 2183, 2209
Evaluation and Clinical	See IV Appendix	64, 125, 1318, 1334, 1425, 1605, 1609, 2018, 2022	672, 1515, 1520, 1522, 1600, 2157	6, 125, 595, 623, 658, 684, 694, 708, 741, 742, 1403, 1420, 1423, 1432, 1490, 1505, 1521, 1602, 1611, 1612, 1847, 1911, 1912, 1943, 2249, 2255, 2317
Electrophysiology	715, 721, 1425, 1608, 1912, 1983, 1989, 2051, 2132, 2230, 2236, 2237, 2241, 2273, 2281, 2318, 2319	125, 577, 580, 623, 709, 715, 1425	570, 672, 1320, 2219	125, 586, 623, 682, 741, 1309, 1320, 1331, 1912, 2103, 2236
Evoked Responses	721, 1356, 1425, 1427, 1597, 1600, 1608, 1974, 1983, 2000, 2015, 2031, 2157, 2226, 2229, 2230, 2249, 2283, 2318, 2319	125, 580, 591, 1425, 1524, 1605, 2015	570, 672, 730, 1522, 1524, 1600, 1974, 2157, 2234	125, 2103, 2249
Approaches to Perception	See V Appendix	641, 698, 709, 1058, 1077, 1334, 1342, 1409, 1412, 1480, 1547, 1566, 1567, 1609, 1960, 2053, 2070, 2094, 2145, 2159, 2163, 2164, 2170, 2191, 2201, 2202, 2209, 2233, 2276, 2307, 2333	698, 1363, 1412, 1421, 1429, 1476, 1515, 2178, 2242, 2254, 2285, 2301, 2307	639, 1058, 1367, 1383, 1384, 1408, 1409, 1430, 1443, 1476, 1480, 1483, 1501, 1511, 1513, 1576, 1581, 1599, 1602, 1960, 2012, 2032, 2047, 2082, 2145, 2147, 2163, 2183, 2186, 2190, 2209, 2233
Developmental	See VI Appendix	590, 641, 1354, 1372, 1392, 1415, 2018, 2053, 2094, 2095, 2096, 2164, 2227	1363, 1545, 1600, 2242, 2253	694, 1364, 1367, 1383, 1384, 1430, 1437, 1572, 2012, 2045, 2047, 2147, 2181, 2236
Environmental Effects	1381, 1405, 1509, 1519, 1521, 1609, 1612, 1813, 1979, 2014a, 2030, 2101, 2131, 2132, 2135, 2140, 2141, 2142, 2160, 2161, 2239	1517, 1609	601, 1522, 2269	1404, 1406, 1517, 1521, 1612, 1847, 2030, 2135, 2141, 2246, 2255
Basic Mechanisms	1363, 1575, 1666, 1974	106, 569, 591, 597, 671, 709, 1342, 1411, 1422, 1428, 1547, 1561, 1567, 1590, 1661, 1960, 2165, 2191, 2307	1342, 1363, 1429, 1974, 2242, 2307	603, 1428, 1583, 1590, 1593, 1599, 1960



Sensory-Motor Integration	Stimulus Integration	Complex Perception	Visual Acuity	Discrimination	Retina in Perception
603, 720, 1436, 1526	603, 1410, 1501, 1513, 1514, 1583, 2190, 2202, 2275	591, 1342, 1410, 1473, 2171, 2172, 2202	292, 749, 1413, 1437, 1514, 1521, 1522, 2327	591, 698, 1342, 1502, 1513, 1514, 1522, 1560, 1804, 2275	660, 698, 1437, 1529, 1804, 2257, 2272
641, 2270	616, 641, 672, 679, 710, 726, 730, 1421, 1561, 1944, 2202	672, 735, 1363, 1414, 1435, 1439, 1475, 1535, 1543, 1562, 1594, 1906, 2028, 2062, 2094, 2124, 2193, 2202, 2227, 2231	64, 619, 641, 646, 725, 1437, 1588	106, 232, 577, 583, 587, 619, 641, 647, 667, 679, 690, 698, 699, 700, 703, 710, 718, 723, 726, 1363, 1475, 1479, 1515, 1536, 1554, 1561, 1562, 1567, 1588, 1944, 1974, 2178, 2193	6, 37, 64, 98, 106, 211, 232, 577, 583, 587, 647, 676, 690, 698, 699, 700, 709, 718, 725, 730, 735, 1437, 1906, 2094
623, 641, 682, 720, 741, 742, 1331, 1532, 2252	641, 661, 664, 710, 730, 737, 741, 742, 1334, 1365, 1512, 1582, 1608, 1661, 1971	1365, 1475, 1906, 2005, 2019, 2170, 2172, 2182, 2194, 2205	641, 649, 737	106, 569, 577, 587, 596, 641, 690, 699, 703, 710, 737, 1365, 1475, 1484, 1559, 1971, 2219	106, 569, 586, 587, 596, 649, 660, 661, 664, 690, 699, 702, 709, 714, 715, 730, 737, 1459, 1584, 1597, 1906, 2237
741, 742, 1488, 1911, 2130, 2131, 2252, 2255, 2256	595, 672, 694, 741, 742, 1334, 1514, 1971, 2022, 2060, 2157, 2249, 2250, 2255, 2275, 2306	293, 672, 1548, 1609, 2005, 2019, 2065, 2152, 2255	64, 125, 204, 292, 293, 555, 619, 658, 669, 694, 708, 749, 1018, 1514, 1521, 1522, 1523, 1588, 1616, 1847	125, 230, 619, 658, 1514, 1515, 1522, 1588, 1602, 1971, 2011, 2175, 2275	11, 37, 98, 204, 570, 577, 586, 587, 649, 699, 702, 709, 715, 718, 1140, 1459, 2237
623, 741, 1331	672, 741, 1608	672	125, 204, 646, 649	125, 577, 587, 699, 718, 2219	6, 37, 64, 98, 204, 230, 577, 658, 1140, 1504, 1523, 1528, 1529, 1597, 1604, 1614, 1933, 2179, 2180, 2229
	672, 730, 1512, 1524, 1608, 1944, 2157, 2249	591, 672, 1524, 2182, 2205	125, 204, 1368, 1522, 2009	125, 591, 699, 1393, 1522, 1524, 1559, 1908, 1944, 1974, 2011	37, 98, 204, 570, 699, 730, 1597, 2229
641, 1383, 2047, 2243	639, 641, 675, 678, 737, 1334, 1383, 1421, 1429, 1480, 1483, 1501, 1512, 1513, 1570, 1591, 1667, 1973, 1979, 2003, 2046, 2060, 2075, 2147, 2148, 2164, 2181, 2190, 2202, 2243, 2276, 2306	See VII Appendix	293, 641, 737, 1367, 1384, 2004	230, 641, 698, 700, 737, 1058, 1342, 1363, 1383, 1384, 1385, 1418, 1429, 1475, 1483, 1513, 1515, 1567, 1581, 1591, 1602, 1997, 2057, 2059, 2075, 2159, 2178, 2201	230, 698, 700, 709, 737, 1068, 1077, 1384, 1566, 1576, 2094, 2158, 2237
641, 1383, 1666, 2045, 2047, 2130, 2166	641, 678, 694, 1365, 1383, 1389, 1545, 2003, 2046, 2062, 2148, 2164, 2166, 2181, 2213	1363, 1365, 1367, 1372, 1384, 1666, 1992, 1993, 1994, 1997, 1998, 1999, 2001, 2003, 2004, 2019, 2035, 2036, 2040, 2041, 2043, 2046, 2047, 2055, 2057, 2059, 2065, 2094, 2096, 2097, 2124, 2146, 2147, 2148, 2149, 2164, 2171, 2227, 2242	204, 555, 641, 694, 725, 1018, 1364, 1367, 1384, 1437, 1588, 2004, 2009	641, 1363, 1365, 1383, 1384, 1385, 1418, 1448, 1545, 1588, 1997, 2011, 2043, 2056, 2057, 2059, 2162, 2177, 2213, 2251	204, 725, 1372, 1384, 1387, 1437, 1504, 2026, 2094
2131, 2136, 2252, 2255	1040, 1979, 2255	1609, 2140, 2255	1404, 1847, 2030		601, 1040
603, 1666	603, 675, 704, 1411, 1428, 1429, 1561, 1583, 1592, 1661	591, 1342, 1363, 1422, 1466, 1547, 1562, 1569, 1575, 1587, 1666, 2021, 2242, 2307	670, 1523	106, 230, 569, 591, 689, 1342, 1363, 1429, 1560, 1561, 1562, 1567, 1569, 1974, 2165	106, 136, 230, 569, 709, 1523

<div>Subject</div> <div>Approach</div>	General	Input/Output	The Visual Stimulus	Oculomotor Performance
Equipment and Methods	602, 663, 1427, 1470, 1977, 2104, 2286, 2288, 2299	14, 175, 578, 579, 612, 660, 663, 1815, 1907	175, 660, 720	603, 660, 720, 1357, 2192
Behavioral Tests	630, 651, 1440, 1470, 1474, 2227, 2283	577, 582, 610, 630, 651, 709, 1440, 1565, 1907, 2156, 2227		593, 2192
Neurological Correlates	See VIII Appendix	See IX Appendix	175, 600, 613, 627, 650, 660, 711, 720, 730, 740, 1033, 2110, 2207, 2217	593, 623, 629, 653, 660, 682, 683, 685, 687, 701, 706, 716, 720, 732, 736, 742, 1315, 1331, 1349, 1357, 1416, 1447, 1534, 1542, 1582, 1905, 1914, 1941
Evaluation and Clinical	634, 677, 1101, 1312, 1397, 1401, 1427, 1432, 1580, 2019	1401		742, 1432, 1943
Electrophysiology	53, 156, 581, 619, 628, 650, 653, 677, 681, 683, 707, 713, 715, 719, 733, 1029, 1101, 1426, 1434, 1465, 1540, 1568, 1915, 1980, 1986, 2051, 2237, 2241, 2287, 2294	14, 53, 156, 175, 182, 183, 184, 191, 577, 578, 579, 612, 628, 650, 655, 665, 677, 691, 709, 711, 715, 740, 1348, 1539, 1775, 2207, 2294	175, 650, 711, 740, 1601, 2207, 2217	593, 629, 653, 682, 683, 685, 687, 701, 706, 736, 743, 1331, 1349, 1534, 1582
Evoked Responses	615, 1317, 1371, 1427, 1595, 1915, 1930, 1980, 1986, 2038, 2198, 2279, 2283, 2294	631, 2198, 2207, 2294	613, 730, 2207	1349
Approaches to Perception	617, 681, 719, 1312, 1319, 1329, 1474, 1481, 1929, 1977, 1980, 2042, 2051, 2110, 2153, 2196, 2198, 2206, 2237, 2299, 2301, 2311	582, 600, 631, 655, 709, 1348, 1438, 1541, 1606, 1775, 1929, 1960, 2107, 2156, 2191, 2198	1799, 2110, 2301	639, 1416, 1542, 1914, 1960
Developmental	602, 606, 628, 634, 637, 642, 650, 653, 657, 673, 683, 707, 713, 739, 1312, 1317, 1319, 1322, 1354, 1371, 1396, 1465, 2019, 2020, 2024, 2051, 2134, 2167, 2227, 2295, 2299	590, 628, 650, 665, 734, 1354, 1539, 2227	650, 1545	629, 653, 683, 1364
Environmental Effects	602, 610, 615, 628, 637, 642, 653, 657, 663, 673, 683, 712, 713, 733, 739, 1029, 1312, 1322, 1533, 1595, 1776, 1784, 1814, 1824, 1930, 1938, 1991, 2134, 2137, 2153, 2167, 2196, 2279, 2297, 2304, 2312, 2314	610, 628, 1824, 1938	2200	653, 683, 1517a
Basic Mechanisms	53, 638, 1073, 1558, 1814, 1824, 1904, 1955, 2086, 2110, 2286, 2287, 2288, 2304, 2312, 2314	53, 68, 191, 224, 578, 579, 600, 638, 665, 709, 1310, 1348, 1438, 1541, 1824, 1960, 2156, 2169, 2191	1601, 2110	603, 1960, 2155

Sensory-Motor Integration	Stimulus Integration	Complex Perception	Visual Acuity	Discrimination	Retina in Perception
603, 720, 1357, 1977	603, 612, 1907	1815, 1907	379, 1544	1470, 1518, 1544, 1815, 2299	14, 64, 109, 175, 578, 579, 612, 660, 1518
1450, 2270	593, 651, 697, 1440, 1450, 1907, 2156	1907, 1969, 2227	646	232, 577, 582, 585, 587, 630, 718, 1440, 1450, 1470, 1518, 1563, 1969	58, 232, 577, 630, 709, 718, 1440, 1518
685, 701, 706, 720, 742, 1317, 1331, 1333, 1348, 1353, 1357, 1394, 1416, 1447, 1450, 1482, 1500, 1530, 1542, 1905, 1918, 1941, 1953, 1977	36, 582, 593, 600, 612, 621, 628, 638, 651, 665, 677, 683, 685, 691, 697, 713, 719, 742, 1317, 1348, 1378, 1450, 1512, 1564, 1613, 1907, 1914, 1919, 1929, 1932, 1982, 2110, 2189, 2240, 2245	1042, 1329, 1348, 1378, 1454, 1455, 1456, 1468, 1596, 1613, 1907, 2019, 2187, 2188, 2189, 2198, 2204, 2240	600, 610, 634, 649, 732, 1369	577, 582, 585, 587, 608, 630, 634, 638, 650, 686, 707, 719, 1317, 1416, 1433, 1440, 1450, 1457, 1468, 1470, 1472, 1515, 1542, 1552, 1563, 1606, 1613, 1919, 1980, 1982, 2083, 2187, 2217, 2245	See X Appendix
742	677, 742, 2060	2019	634, 1900	634	118, 577, 578, 677
685, 701, 706, 1331, 1348	593, 612, 628, 655, 665, 677, 683, 685, 691, 713, 719, 1348, 2245	1042, 1348, 1454, 1455, 1456, 1463	646, 649	577, 587, 650, 681, 707, 718, 719, 1457, 1518, 1980, 2217, 2245	14, 53, 87, 90, 101, 118, 175, 182, 183, 184, 191, 209, 577, 578, 579, 587, 607, 612, 626, 649, 655, 677, 681, 702, 707, 709, 711, 713, 715, 718, 740, 1032, 1042, 1049, 1451, 1457, 1460, 1518, 2207, 2218, 2220, 2221, 2237, 2294
1317	36, 1317, 1512	2198		1317, 1515, 1563, 1980	36, 87, 101, 613, 631, 1049, 2198, 2207, 2294
1348, 1416, 1450, 1481, 1542, 1799, 1918, 1977	582, 600, 617, 639, 655, 719, 1348, 1450, 1512, 1541, 1914, 1929, 1982, 2060, 2110, 2156, 2240, 2245	1329, 1348, 1454, 1463, 1969, 2187, 2188, 2198, 2206, 2240	600	5, 582, 662, 681, 719, 1338, 1416, 1450, 1457, 1481, 1542, 1552, 1606, 1969, 1980, 1982, 2187, 2196, 2206, 2245, 2299, 2301	5, 594, 631, 655, 662, 681, 709, 1451, 1457, 2107, 2198, 2237
641, 1317, 1322	628, 665, 683, 713, 1317, 1378, 1478, 1545, 1589, 2024	1378, 1454, 1455, 1456, 1468, 2019, 2227	634, 1364, 1589	634, 650, 686, 707, 1317, 1382, 1457, 1468, 1545, 2299	87, 594, 686, 707, 713, 734, 1451, 1457, 1468
1322	628, 683, 713, 1040		379, 610, 1037, 1045, 1062	5, 2196, 2200, 2289	5, 77, 101, 142, 594, 713, 1039, 1040, 1049, 1054, 1259, 1824, 2289
603, 1348, 1955	600, 603, 638, 665, 1348, 1541, 2110, 2156	1042, 1348, 2155	600, 1544	585, 638, 1433, 1544,	53, 68, 191, 575, 578, 579, 709, 1042, 1122, 1433, 1445, 1585, 1824, 1829, 2169

Subject Approach	Behavior Psychiatric	Neurologic (Central Nervous System, Paths)	Aging	Development	Genetics, Hereditary	Injury, Drug Effects, Toxic Substances
Basic Mechanism	1485, 1232	1485	441, 1504, 1786, 2132	75, 666, 2049	419	349, 978, 1303, 1786, 1893, 2132, 2143, 2274
Epidemiology		991, 1607, 1625a		1400, 1892, 2067, 2130	70, 1400	1046, 1066, 1262, 1271, 1486, 1507, 1519, 2274
Etiology	1040, 2074, 2179, 2180, 2224, 2244, 2249	1361, 1607, 1987, 2066, 2111, 2116, 2252	418, 476, 1299	666, 1366, 1375, 1376, 1892, 1897, 2014, 2027, 2044, 2048, 2049, 2053, 2058, 2066,	419, 1761, 1762, 1867, 2011	546, 1037, 1269, 1299, 1300, 1303, 1730, 1893, 2133
Pathogenesis		1361	418, 441, 476, 1786	1506, 2014	419, 1762, 1763, 1790, 1791	349, 486, 1050, 1786
Diagnostic Methods	2223, 2230, 2249	1347, 1361, 1491, 1603, 1772, 1974, 1981, 1983, 2068, 2069, 2111	2124, 2125	1897, 2006, 2007, 2063, 2067, 2068, 2069, 2130	70, 563, 1016, 1763, 2000, 2011, 2125	1019, 1087, 2316
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Treatment and Prophylaxis (Experimental)		1987		1362	419, 1789, 1831	1269, 1789, 1831
Treatment and Prophylaxis (Clinical)	1040, 1432, 2230			1838	563, 1725, 1728	349, 1269
Patient Care, Rehabilitation	1487, 1503	1487, 1610, 1973, 1988, 2252		2002, 2044, 2052, 2252b	1724, 1894	
Equipment, Methods			441, 1504			1046, 1284



Endocrinology, Neuroendocrinology, Autonomic	Diabetes	Metabolism, Other; Nutrition, Gastrointestinal	Connective Tissue, Cardiovascular, Genitourinary, Renal, Respiratory, Skin, Bone Diseases	Cancer	Infections	Immunology
1227, 1485	1126, 1744, 1902	333, 1744, 1832	52, 96, 978, 1303, 1720, 1832, 1893	1190	343	
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1227, 1305	171, 203, 463, 976, 979, 1131, 1793	203	52, 203, 219, 344, 979	82	158, 344, 358, 381, 409a, 1231	344, 409a, 458
1304		1044	96, 192, 219, 518, 344, 981, 1087, 1772, 1792, 2111	66, 303, 958, 1144, 1190, 1298, 1881, 1885 2322	344, 358, 366, 399, 1107, 1858, 1861	344, 1304, 1603, 1861, 1881
542, 1015, 1222, 1227, 1283, 1304, 1305, 1485, 1788, 1899, 1901	See XI Appendix A	23, 203, 333, 1044, 1189, 1194, 1198, 1832, 1833, 1867, 1900, 2026, 2106	52, 96, 192, 193, 203, 219, 344, 518, 974, 978, 979, 981, 991, 1087, 1299, 1300, 1301, 1302, 1303, 1610, 1614, 1719, 1746, 1772, 1792, 1802, 1807, 1832, 1900, 2111	66, 82, 303, 958, 960, 965, 1091, 1144, 1189, 1233a, 1298, 1717, 1882, 1885, 1886, 1887, 1888, 1889, 1890, 1891, 2081, 2322	343, 344, 358, 369, 381, 385, 399, 409a, 410, 755, 1107, 1192, 1201, 1231, 1234, 1241, 1862, 1864	52, 108, 220, 318, 344, 404, 409a, 410, 458, 1194, 1252, 1304, 1862, 1882, 1887, 1901
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Subject Approach	Behavior, Psychiatric	Neurologic (Central Nervous System, Paths)	Aging	Development	Genetics, Hereditary	Injury, Drug Effects, Toxic Substances
Basic Mechanism	2210	394, 994, 1307, 1321, 1332, 1337, 1339, 1343, 1350, 1359, 1380, 1580, 1768, 1773, 1817, 1909, 1923, 1928, 1932, 1934, 1937, 1939, 1942, 1947, 1948, 1951, 1956, 1958, 1961, 1962, 1970, 1978, 2076, 2120, 2122, 2204, 2214, 2296, 2310	441, 2093	75, 85, 97, 300, 340, 387, 470, 568, 633, 642, 644, 645, 656, 657, 666, 673, 674, 712, 739, 995, 1009, 1071, 1193, 1256, 1323, 1332, 1380, 1546, 1549, 1778, 1779, 1934, 1947, 1958, 2034, 2265, 2296	419, 633, 739, 1256, 1872	349, 394, 379, 446, 514, 515, 516, 674, 1516, 1800, 1801, 1810, 1837, 1849, 1873, 1893, 2106, 2139
Epidemiology		1272		1272	1272	1048, 1051, 1052, 1207, 1257, 1271, 1486, 1517a, 1800, 1810, 1870, 1878, 2092, 2284
Etiology	1040, 2210	994, 1307, 1337, 1350, 1360, 1361, 1467, 1469, 1770, 1920, 1922, 1925, 1928, 1939, 1958, 1962, 1966, 1985, 1987, 2039, 2108, 2109, 2119	476, 665	85, 300, 487, 622, 644, 656, 665, 666, 673, 731, 739, 999, 1009, 1025, 1193, 1239, 1336, 1586, 1958, 1990, 1991, 2034, 2038, 2039, 2058, 2073, 2080, 2085, 2087, 2167, 2303	419, 432, 512, 554, 622, 739, 1761, 1762, 1796, 2060	174, 225, 433, 446, 501, 514, 546, 980, 1300, 1516, 1837, 1860, 1879, 1893, 1896, 1991, 2128, 2134, 2139
Pathogenesis		584, 1314, 1361, 1380, 1956, 2113	441, 476	995, 997, 1314, 1380	419, 512, 554, 1762	38, 80, 349, 486, 1050, 1265, 1268, 1727, 1810, 1879
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Eye Involvement	1963, 2210, 2225, 2228	See XII Appendix	441, 476, 654, 665	See XIII Appendix	134, 149, 243, 249, 419, 512, 554, 622, 633, 739, 988, 1256, 1272, 1391, 1761, 1762, 1780, 1796, 1830, 1877, 1921, 2081, 2088, 2106, 2260	See XIV Appendix
Treatment and Prophylaxis (Experimental)		1930, 1987			419, 512, 1789	174, 308, 379, 514, 967, 1208, 1224, 1286, 1789, 1930
Treatment and Prophylaxis (Clinical)	1040			2073	1725, 1728	349, 967
Patient Care, Rehabilitation						
Equipment, Methods		1815, 1949, 1957, 1970, 1978, 2118, 2310	441, 665	665, 1009, 1071, 1586, 2085	2060, 2088	1047, 1051, 1052, 1060, 1208



Endocrinology, Neuroendocrinology Autonomic	Diabetes	Metabolism, Other; Nutrition, Gastrointestinal	Connective Tissue, Cardiovascular, Genitourinary, Renal, Respiratory, Skin, Bone Diseases	Cancer	Infections	Immunology
553, 1042, 1744, 1843, 1865, 1931, 1950, 2076, 2261, 2263, 2265, 2268, 2305, 2308, 2313	986, 1132, 1737, 1742, 1744	48, 190, 428, 431, 467, 553, 970, 986, 995, 1249, 1744, 1764, 1809, 1876, 2106	42, 52, 96, 340, 401, 973, 1132, 1748, 1893, 1956, 2093, 2222	1794, 1805, 1883	343	1883
	1722, 1783, 1787		52	1883	358, 386, 1220	1883
523, 531, 553, 2195	975, 463, 1722	190, 483, 553, 1809, 1876	980, 1300, 1739, 1748, 1757, 1893, 1896	1092	147, 158, 163, 229, 350, 358, 381, 383, 385, 413, 1841, 1842	359, 458, 1092, 1841, 1842, 2195
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		2299	96, 219	958, 968, 1298, 1881,	356, 358, 386, 1220, 1842	144, 1842, 1881
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	63, 73, 86, 1738, 1747	94, 483	73, 219, 401, 517, 1145	82, 967, 968, 1298, 1496, 1805	158, 229, 344, 350, 356, 367, 369, 371, 381, 382, 384, 397, 410, 1081, 1217, 1250	402, 410
				82, 967, 1889	358, 385, 1220, 2117	359
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